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**TRANSMITTAL
FORM**

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Total Number of Pages in This Submission

Application Number	10/635,873
Filing Date	08/05/2003
First Named Inventor	Alice H. Howe
Art Unit	3711
Examiner Name	Raleigh W. Chiu
Attorney Docket Number	MPH 03-13

ENCLOSURES (Check all that apply)

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> Fee Transmittal Form
<input checked="" type="checkbox"/> Fee Attached
<input type="checkbox"/> Amendment/Reply
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<input type="checkbox"/> Affidavits/declaration(s)
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<input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53 | <input type="checkbox"/> Drawing(s)
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Remarks

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Signature *M. Paul Hendrickson*

Printed name M. Paul Hendrickson

Date 01/05/2006

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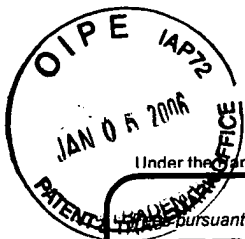
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Date 01/05/2006

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Pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL

For FY 2005

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 250.00

Complete if Known

Application Number	10/635,873
Filing Date	08/05/2003
First Named Inventor	Alice H. Howe
Examiner Name	Raleigh W. Chiu
Art Unit	3711
Attorney Docket No.	MPH 03-13

METHOD OF PAYMENT (check all that apply)☒ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____☐ Deposit Account Deposit Account Number: _____ Deposit Account Name: _____

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☐ Charge fee(s) indicated below☐ Charge fee(s) indicated below, **except for the filing fee**☐ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17☐ Credit any overpayments**WARNING:** Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**FEE CALCULATION****1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES**Fee Description**

Each claim over 20 (including Reissues)

Fee (\$)	Small Entity Fee (\$)
50	25
200	100
360	180

Each independent claim over 3 (including Reissues)

Multiple dependent claims

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
_____ - 20 or HP = _____	x _____	=	

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
_____ - 3 or HP = _____	x _____	=	

HP = highest number of independent claims paid for, if greater than 3.

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
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Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge): filing a brief in support of an appeal

Fees Paid (\$)

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SUBMITTED BY

Signature	<i>M. Paul Hendrickson</i>	Registration No. (Attorney/Agent) 24523	Telephone 608-526-4422
Name (Print/Type)	M. Paul Hendrickson	Date	01/05/2006

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)
Alice H. Howe) Application No: 10/635,873
TENNIS RACQUET EQUIPPED) Art Unit 3711
WITH A TENNIS BALL RETRIEVER) Examiner: Raleigh W. Chiu
Attorney Docket No.: MPH 03-13) Filing Date: 08/05/2003

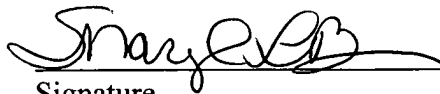
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10/635,873

THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)	
)	Application No: 10/635,873
Alice H. Howe)	
)	Art Unit 3711
TENNIS RACQUET EQUIPPED)	
WITH A TENNIS BALL RETRIEVER)	Examiner: Raleigh W. Chiu
)	
Attorney Docket No.: MPH 03-13)	Filing Date: 08/05/2003

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APPELLANT'S APPEAL BRIEF

Appellant's Appeal Brief for the captioned Application is submitted herewith pursuant to the Notice of Appeal mailed on behalf of Appellant to the Assistant Commissioner for Patents on November 8, 2005.

Real Party in Interest

The Real Party in Interest is the Appellant, Alice H. Howe.

Related Appeals and Interferences

There are related appeals or interferences to this Appeal. The Board of Appeals and Interferences in Appeal No. 2004-2020, of Parent Application No. 09/655,743, reversed, in toto, the 35USC103(a) rejections then of record.

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Status of Claims

Claims 1, 4, 6, 7, 9, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over one of U.S. Patent Number 4, 834,393 (Feldi) or French Patent Number 2,594,037 (Musslin) either in view of U.S. Patent Number 5,077,870 (Melbye et al., hereinafter Melbye), U.S. Patent Number 6,401,997 (Smerdon, Jr., hereinafter Smerdon) and applicant's admission of

prior art (AAPA). This final rejection differs from the claims on appeal in the parent application by the newly cited *Smerdon*.

Claims 8, 11 and 13-15 stand finally rejected under 35 USC 103(a) as being unpatentable over *Feldi*, or *Musslin*, in view of *Melbye*, *Smerdon* and AAPA as applied above and further in view of U.S. Patent No. 4,993,712 (*Urwin*). The issues are essentially the same as the formerly appealed claims except for newly cited *Smerdon*.

Status of Amendments

All amendments to the Claims had been duly entered by the Examiner prior to the final rejection and this Appeal.

Summary of Invention

Prior to Appellant's invention, there existed no ball retrieving attachment or method which would allow all major brands of tennis balls to be repetitively and effectively lifted and retrieved merely upon tangential contact. The prior art solutions included cupping the tennis ball (e.g. *Urwin*), use of metallic hooks or barbs (e.g. *Ross*), or a complete changing of the tennis ball covering to a non-conforming looped or hooked material pile (e.g. *Feldi*) cover so as to allow the ball (not a tennis ball by definition) to be retrieved by the paired hook and loop fastening system combination functioning in its intended form of usage.

Tennis is a sport requiring the skillful dexterity and manipulation of a tennis racquet so as to impart the precise impacting speed, spin and positioning of the tennis racquet in an attempt to create a most difficult ball flight for the opposing player to return. Tennis racquets are accordingly engineered and designed to provide a perfectly balanced racquet (typically of graphite or composite construction) which allows the tennis player to precisely manipulate and position the tennis racquet to the exact strike zone for striking and returning the tennis ball. Any imbalance in the tennis racquet will be readily reflected in an errant or poor tennis ball flight. A tennis ball meets a standard of identity and, as taught by *Feldi*, must necessarily retain its nap cover to be useful in tennis play. The metallic hooks of *Ross* (MID-TEMP VELCRO stainless

steel mesh) as reported by *Feldi* and others were ineffective tennis ball retrievers and caused extensive damage to the tennis ball cover.

The shot of the tennis ball player necessitates not only that the racquet be perfectly balanced, but also that any ball retriever attachment will not create any unbalanced weight (where fractions of an ounce is critical) or a design flow disrupting the aerodynamics of the racquet and its ability to slice through the air with a minimum of resistance without any appreciable air drag. These factors are essential in order for any tennis racquet to create desired ball impacting speed, spin upon the impacted ball, positioning of the racquet, the balance of the racquet, the touch, the weight of the racquet, and a host of other factors attributable to an effective striking of the tennis ball and tennis play. Appellant's invention preserves all of these attributes, while also providing a unique ability to engage and repetitively lift all major tennis ball brands merely by tangential contact without destroying the tennis ball cover.

Appellant's claimed invention involves an unexpected discovery that an unknown tennis ball retrieving attachment **30** has a uniquely distinctive ability for engaging and lifting all major tennis ball brands upon tangential contact (claim 1, lines 2-3; claim 10, line 4; Figures 2B and 4; and page 5, lines 1-10) to provide an unexpected method of lifting and retrieving all major grounded tennis ball brands upon tangential contact. As pointed out in Appellant's background of the invention, the prior art had recognized early that hooked materials were incapable of tangentially hooking onto the nap of conventional tennis balls (e.g. see specification on page 1, line 5 thru page 4, line 10). The prior art had without success attempted (as reported by *Ross*, *Feldi*, *Lamson*, *Urwin* and Appellant) to use metal hook materials. The metallic hooked materials are inherently rigid, lack resiliency and memory and therefore are ineffective. Conversely, the plastic hooks lacked an inherent ability to tangentially hook and lift grounded tennis balls (e.g. see *Feldi*, *Urwin*, etc.). As a result, the prior art sought alternatives such as to graspingly cupping the tennis ball, (as taught by *Urwin*) or, alternatively, to completely replace the tennis ball cover with either the loop or hooked material of the paired hook and loop fastening system, as the cited *Feldi* patent teaches. Unfortunately these "solutions" often result

in altering the tennis equipment so that it no longer effectively functions in its intended manner or meets the standards of identity of required tennis equipment.

The tennis ball retrieving attachment **30** is not only surprising capable upon tangential contact to lift all major brands, but will lift all major tennis ball **T** brands weighted four to six fold their original weight, as reported in Table 1, page 13 of Appellant's specification. This amazing capacity is unexpected since the prior art as evidenced by the art of record considered tangential lifting without damage to the tennis ball to be unfeasible (e.g. see appellant's background of the invention disclosure, *Urwin* and *Feldi* and also note the background of the invention of U.S Patent Number 6,652,397 B1 to Lamson, Col. 1, lines 65-67, and Col. 2, lines 19-20). The Table 1, 2 and 3 findings on pages 13 and 14 of Appellant's specification further documents Appellant's unique and unexpected findings.

Appellant's claims on appeal are more limited than those of the parent application appealed claims by replacing the word "comprising" with the words "consisting essentially of" in independent claims 1 and 10. Appellant's claims are directed towards a unique tennis ball retrieving attachment **30** of unknown and unreported efficacy adhesively affixed to a shoulder **11** of a tennis racket **1** in a tangential contacting ball retrieving position (such as illustrated in Figures 1, 2A, 2B and 6; and described on page 5, lines 4-12; page 6, lines 21-25; page 7, lines 19-20; page 8, lines 7-16) for repeatedly engaging and lifting a grounded tennis ball **T** simply upon tangential contact with the tennis ball **T** as shown in Appellant's Figures 2B and 4. The manner in which the tennis ball retrieving attachment **31** is positioned upon the tennis racquet shoulder **11** allows for only tangential contact with a grounded tennis ball **T** as illustrated via Figures 2B, 4 and 6-7 2B. Appellant's unique and unexpected discovery overcomes an old, perplexing unsolved problem. There existed no teachings of any known thermoplastic hooked material (a large genus) much less a ball retrieving attachment **30** equipped with a nylon monofilament hooked material **31** which could be attached to tennis racquet shoulder **11** and uniquely engage a tennis ball nap **N** simply upon tangential contact (see Fig. 2B), much less lift several fold the tennis ball weight, and even more unexpectedly (i.e. the invention as a whole) to

work with repetitive consistency upon all major tennis ball **T** brands, when, in fact, the prior art had repeatedly acknowledged its futility and sought a host of alternative modes to solve this perplexing problem.

The distinctively different attachment **30** equipped with the unique (one of a known kind) claimed pre-shrunk nylon monofilament hooked material **31** is characterized by its uniquely distinct features as “having a series of preshrunk nylon monofilament hooks” **31** of a prescribed characterization for engaging and lifting the grounded tennis ball **T** upon tangential contact with the hooks **31**. The unique attachment **30** is further defined by distinctive hooks **31** of a prescribed physical characterizations (with reference to Figure 5) “as having an average monofilament diameter **d** greater than 8.0 mil and an average hook height of at least 1.70 mm.” (e.g. see claim 1, lines 8-9, first three columns, Table 3, page 9, lines 6-17.)

The method claims 10-15 similarly tightly define the distinctively unique ball retrieving attachment **30** as providing a strip of a hooked material **30** having a pressure sensitive adhesive **33** applied to a resilient backing member equipped with a plurality of hooks **31** (claim 10, step a) of the very narrowly defined unique and distinctive hooked character (e.g. see page 9, line 5; page 10, line 10; Tables 2 and 3; and Figures 3-5) of:

- “an average monofilament diameter **d** of at least 8.0 mil,”
- “an average hook height **h** of at least 1.85 mm,”
- “an average hook width **w** of at least 1.0 mm,”
- “an average depth **H_d** of at least 0.6mm,” and
- “with the hooks **31** being of a spiral configuration and arranged in repetitive rows of at least 250 hooks per square inch as depicted in Figures 4 and 7;

An integral part of the method claims involves the discovery and characterization of providing a tennis ball retrieving attachment **31** of an unknown tennis ball retrieving efficacy (clearly acknowledged by all of the relevant enabling prior art teachings) which allows for the unexpected tangential retrieval of all tennis balls. This Method of Claimed claims 10-15 including the step of applying the pressure sensitive strip **30** equipped with a narrowly defined, one-of-a-kind,

hooked preshrunken monofilament **31** (unknown for its compatibility and affinity to the nap **N** of a tennis ball **T**) to the outer peripheral rim **12** of the shoulder **11** of the tennis racquet **1** at the retrieving position so as to permit the distinctive nylon monofilament hooks **31** of the hooked material **30** to make the tangential contact with the grounded tennis ball **T** (claim 10, step b) are untaught and unsuggested by the art as clearly evident by all of the relevant and enabling teachings of the cited prior art. The method claims 10-15 distinctly require tangentially contacting the grounded tennis ball **T** (as shown in Figure 2B) with the unique and one-of-a-kind nylon monofilament hooks **31** so as to tangentially engage and hook a tennis ball **T** nap **N** (as illustrated in Figure 4) of the grounded tennis ball **T** onto said nylon monofilament hooks **31**; then lifting the hooked tennis ball **T** engaged by the nylon monofilament hooks **31** with the tennis racquet **1**; and retrieving the lifted tennis ball **T** from the strip.”

The unique tennis ball retrieving attachment **30** including the discovery of providing an attachment **30** fulfilling the necessary retrieving requirements and compatibility, the unexpected efficacy and comparative data illustrating what works and what does not work (e.g. see page 8, line 17 to page 16, line 12) including the comparative studies of Appellant’s Example and an understanding as to the operable mechanics of the ball attachment **30** constitute solely Appellant’s contribution to the art.

Appellant discovered that a rare and specific tennis ball retrieving attachment **30** equipped with a unique nylon monofilament hooked material **31** of a very precise dimensional structure with atypical compositional and physical characteristics which when applied as a tennis ball retrieving attachment to a tennis racquet shoulder **12** would have the unknown and unreported efficacy of repetitively retrieving all major tennis balls **T** upon tangential contact while all others failed. This unknown and unique retrieving attachment **30** could not only tangentially lift all major tennis ball brands, but could lift several fold (e.g. four to six times) its own weight (e.g. see Tables 1 and 2). The unexpected nature of this discovery is verified by the art of record (which clearly teaches the unfeasibility or futility of such an accomplishment), the comparative results as disclosed in Appellant’s example and verified by Appellant’s Affidavit of

Record^D. The discovery made by the Appellant is analogous to finding a “needle in the haystack” amongst an immense field of technology without any knowledge that such a needle existed and even more astounding, what could be accomplished by Appellant’s unique invention.

Appellant discovered that the preshrunk nylon monofilament hooked material **31** of the ball retrieving attachment **30** possessed highly specialized compositional and macroscopic physical characteristics which when attached to a tennis racquet **1**, will effectively tangentially hook and lift all major brands of tennis balls. The uniquely distinctive attachment **30** (as illustrated by Appellant’s Figure 5 shown in Table 3, page 4 and as claimed in all claims) uniquely penetrates the tennis ball nap **N** or pile, effectively hooks onto a sufficient number of pile **N** threads (as illustrated in figure 4) and then tenaciously retains the threads **N** in a uniquely cooperative inter-relationship as the tennis ball **T** is lifted off the ground (e.g. see specification page 8, line 17; page 10, line 10; and Tables 1-3 of pages 13 and 14.) The tennis player merely detaches or unfastens the tennis ball **T** from the attachment **30**, thus eliminating the need to bend over and manually retrieve the ball from the ground. This represents a completely unexpected relationship since the construction of the typically relatively rigid loop component as commercially paired with claimed monofilament hooks **31** is unlike the soft, pliable and flexible fibrous character of the wool nap **N** of the tennis ball **T**.

Appellant’s uniquely different tennis ball attachment **30** exhibits upon tangential contact with a grounded tennis ball to lift about a capacity four-fold ball the normal weight of all major tennis ball brands, which is unexpectedly and astoundingly unique (e.g. see Tables 1 and 2, page 14), with Appellant commenting on page 14, lines 30-31, that only the ball retrieving attachment **30** as precisely claimed was capable of consistently hooking and lifting all major tennis ball brands.

^D Exhibit D of Appendix

Unlike changing the tennis ball to the paired hook and loop fastening system of *Feldi* or the grasping tennis ball retrieving attachment curved to increase contact and match a tennis ball curvature, such as taught by *Urwin*, Appellant had unexpectedly discovered a unique tennis ball retrieving attachment **30** which (unlike all others) would simply upon tangential contact tenaciously hook and lift any tennis ball pile **N** of the tennis ball **T** from the ground. All other hooked materials of a thermoplastic construction known to the Appellant which (pursuant to Appellant's discovery) failed to possess the precise hook depth **H_u**, hook width **w**, hook height **h**, and hook diameter **d** were found to be incapable upon tangential contact to effectively engage and tenaciously lift all major brands of tennis balls. Prior to Appellant's invention, no one knew or recognized that such a tennis ball retrieving attachment **30** existed or that such a feat could be accomplished or what would be required to achieve such a phenomenal result in the face of consistent prior art teachings that it could not be done.

Appellant's hooked material attachment represents a highly unique attachment **31** which was unexpectedly found (contrary to all learned teachings) to possess a uniquely different affinity to a tennis ball nap **N**. The claimed hooked materials **31** of Appellant's claimed ball retrieving attachment **30** are uniquely processed (e.g. see pages 8-16; Figure 5 and Table 3, page 14) so as to produce an unusually thicker monofilament hook **31** thickness (e.g. at least 8.5 mm in diameter), pre-shrunk so as to create unique dimensional stability and flatness so as to tenaciously retain the hooked fibrous pile **N** of tennis ball **T** and permit the tennis ball **T** to be repetitively lifted from the ground. These uniquely distinctive hooks **31** also have an unusually deeper than average hook depth (at least 0.65 mm) so as to permit deeper penetration of the hooks **31** so as to permit a more tenacious retention of fibrous pile **N** hooked by the hooks **31**, the average hook width **w** of about 1.1 mm to about 1.3 mm allows more space for the pile fibers **N** to be hooked by the hooks **31**. The average height of the hooks is also significantly greater (at least 1.85 mm) from all other tested hooks which reflects in its deeper penetration into the pile of tennis ball and greater quantum of fibrous pile **N** to be potentially hooked and retained by the hooks **31**. The tennis ball retrieving attachment **30** must necessarily contain a sufficient number

of individual hooks **31** so as to effectively hook and lift all major brands of tennis balls **T** of a unique ball retrieving attachment **30**. A tennis ball retrieving attachment **30** possessing a unique cooperative interrelationship between hook height **h**, hook diameter **d**, hook width **w**, hook depth **H_d** and the tennis ball nap **N** which allows the attachment **30** to engage and lift all major tennis balls **T** on tangential contact was Appellant's discovery alone. **NO OTHER** known ball retrieving attachment amongst a host of potentially different products possesses this unique capability. No other person, reference or patent disclosed, recognized or remotely contemplated the unique set of cooperative characteristics of a ball retrieving attachment **30** which would permit a tennis ball attachment **30** to tenaciously engage onto the tennis ball nap **N** and lift the tennis ball **T** upon tangential contact.

The invention, as a whole, embodies the heretofore unachievable ability to repetitively engage (without fail) and retrieve all major tennis ball brands upon tangential contact with the tennis ball nap **N** with an attachment **30** attached to the shoulder **12** of a tennis racquet. This has not heretofore been reported, and was expressly regarded amongst the skilled artisans as impossible (as evident from the cited patents and Appellant's summary of prior art in her background of invention teachings), and therefore the attachment **30** and its use yields surprising and unexpected results.

Issues

I

Whether Claims 1, 4, 6, 7, 9, 10 and 12 are patentable under 35USC103(a) over U.S. Patent Number 4,834,393 (Feldi) or French Patent Number 2,594,037 (Musslin) patents and either in view of U.S. Patent Number 5, 077,870 (Melbye), U.S. Patent Number 6,401,997 (Smerdon) and Appellant's alleged admission of the prior art.

II

Whether Claims 8, 11 and 13-15 are patentable under 35USC103(a) over *Feldi* or *Musslin* in view of *Melbye*, *Smerdon* and Appellant's alleged admission of the prior art in further view of US Patent No. 4,993,712 of *Urwin*.

III

Whether a *prima facie* obviousness of the claimed invention of Appellant's claims 1, 4, 6-15 may be established when the essential claimed limitations such as the unique interrelationship between the claimed pre-shrunk nylon monofilaments hooks and tennis ball nap of Appellant's claims 1, 4 and 6-15 are neither taught nor suggested by any of the cited patents relied upon in the 35USC103(a) rejections?

IV

Whether in the Final rejection of appellant's claims 1, 4, 6-7, 9-10 and 12 the newly cited *Smerdon* when viewed in light of *Feldi* or *Musslin* as alternative primary references in further view of either *Melbye, et al, Smerdon* and appellant's alleged admission of the prior art suggestively provide sufficient basis under 35USC103(a) to overturn the previous Board of Patent Appeals decision of reversing the 35USC103(a) rejections in toto under Appeal No. 2004-2020 of Appellant's parent application No. 09/655,743?

V

Whether in the final rejection of claims 8, 11 and 13-15 under 35USC103(a) as being unpatentable over *Feldi, Smerdon* and appellant's alleged admission of the prior art in further view of *Urwin*, the newly cited *Smerdon* provides a sufficient justification to reverse the Board of Appeals decision of Appeal No. 2004-2020 of appellant's parent application 09/655,743?

VI

Whether in the rejection of Appellant's claims 1, 4, and 6-15 equivalency may be presumed 35USC103(a) when Appellant's specifications, claims and affidavit evidence, as well as the cited art, shows without contradictory proof that what the Examiner alleges to be equivalent is not equivalent?

VII

Whether in the rejection of Appellant's claims 1, 4, and 6-15 under the 35USC103(a) rejections, the doctrine of equivalency strictly resting upon the mating combinations of only paired hook and loop fastening systems as taught and intended for use by *Feldi, Melbye* and

Smerdon may be hypothetically extended without factual support to include only one component of the required paired two-component fastener system combination coupled with a further speculative equivalency conclusion of excluding and then replacing the loop fastener mate with an unknown and unrecognized alleged equivalent hook material of a tennis ball nap and then to further speculatively replace the hook material (apparently resting upon the equivalency of all hooked material) with a uniquely different tennis ball retrieving attachment equipped with a saliently different and unique hooked monofilament material so as to permit retrieval of all major brands of tennis balls with an unexpected efficacy?

VIII

Whether in the rejection of Appellant's claims 1, 4, and 6-15 under 35USC103(a) a primary reference (patent) or secondary reference (patent), or both, may be modified by isolated and unrelated patent teachings found in another patent to make a reference combination, which combination as applied in the 35 USC 103(a) rejections of Appellant's claims, renders either the primary or the secondary reference or both inoperative for their intended purpose and function?

IX

Whether in a 35USC103(a) rejection and analysis of Appellant's method claims 10-15, a *prima facie* case of obviousness may be deemed to exist when crucial claimed characteristics are neither taught nor remotely recognized by the art relied upon, the art relied upon in the 35USC103(a) rejections contradicts the claimed embodiments of Appellant's invention, the art relied upon teaches oppositely from the claimed embodiments, there exists no motivation to direct the artisan in the direction of Appellant's claimed method claims 10-15, the claimed tennis racquet attachment and tennis ball affinity were unknown to possess the unexpected claimed efficacy as evidenced by the cited prior art teachings and the unknown claimed combination yielded unexpected results in light of explicit prior art teaching of record stating it could not be done?

X

Whether the unexpected tennis ball retrieving attributes of the tennis racquet equipped with the tennis ball retrieving attachment renders claims 1, 4, and 6-9 and its method of use of claims 10-15 patentable over *Feldi* or *Musslin* French patent in view of *Melbye* and *Smerdon* and an alleged admission of the prior art by Appellant in her specification and in further view of U.S. Patent Number 4,993,712 (*Urwin*)?

XI

Whether Appellant's substantiated unexpected efficacy in tangentially lifting of all major tennis ball brands rebuts any *prima facie* case of alleged obviousness which may arise, if any, in the 35USC103(a) rejection of Appellant's claims 8, 11 and 13-15 as being unpatentable over *Feldi* or *Musslin* in view of *Melbye*, *Smerdon* and alleged Appellant's admission of the prior art in Appellant's specification in view of *Urwin* of the final rejection under 35 USC 103(a)?

XII

Whether the rejections of claims 1, 4, and 6-15 in the newly cited patent (*Smerdon*) which requires both a hook and loop fastener combination fastened a drinking tube outlet (loop) and a bicycle handlebar stem (via the hook) overcomes the teaching shortcomings of the 35USC103(a) rejections of the parent application appeal?

XIII

Whether a claimed invention which directly contradicts the prior art of teaching of record and yields an unexpected result in refutation of the prior teachings may be used as a template to formulate a basis for combining incongruous teachings in the 35 USC 103(a) rejections of appellant's claims 1, 4, and 6-15 and in formulating an alleged appellant's admission of the prior art?

XIV

Whether, in the rejection of all claims, a Patent Examiner may rely upon a host of factually unfounded technical assumptions such as all VELCRO fasteners are equivalent to all SCOTCHMATE and other hook and loop fasteners simply when described as "garment

fasteners”, isolated teachings taken out of context and indiscriminately combined with unrelated teachings which at best discourage and direct the artisan away from what the alleged combined teachings teach, patent teachings explicitly teaching that hook materials are ineffective and cannot be used to tangentially engage and retrieve all major brands of tennis balls are meaningless 35USC103(a) patentability considerations, absence of hook species teachings, may be summarily disregarded and replaced by unfounded hypothetical and theoretical considerations or false premises such as major tennis events are played in “wet” (i.e. raining conditions) and therefore the “wet” conditions of the *Smerdon* watering tube outlet apply to the adhesive backing requirements of a ball retrieving attachment attached to a tennis racquet are sufficient to establish a species teaching, the conjoint use of both the hook and loop fastener combination of *Smerdon* applied to completely different substrates under entirely different conditions would apply to a tennis racquet, a skilled artisan fully appraised of the fact hooked fasteners are notoriously recognized as ineffective for retrieving grounded tennis balls would be ipso facto motivationally captivated (because tennis tournaments are played in the rain) by an adhesive backing possessing “good, wet adhesion characteristics” so that the artisan would not seek any other reason to apply it to a tennis racquet when reportedly no useful purpose (other than a theoretical and abstract purpose) would be served thereby?

XV

Whether in appellant’s method claims 10-15, there exists unobviousness to initially find contrary to all other art accepted teachings that a uniquely different hooked material had a unique affinity to a tennis ball nap so as to permit totally unexpected tangential retrieval of all major brands of tennis balls?

XVI

Whether, in the rejection of claims 1, 4, and 6-15, a species possessing an unknown and unexpectedly superior efficacy in retrieving tennis balls may be presumed from a genus teaching and disjointed species teaching of a hook and loop fastener combination which includes the hook species but no concern of its hook characteristic is sufficient to overcome the prior Board of

Appeals decision.

Grouping of Claims

Group 1: Tennis ball racquet equipped with tennis ball attachment of Claims 1.

Group 2: Tennis ball racquet equipped with a tennis ball attachment as defined by Claims 4, 6 and 9, which claims of the group do not stand or fall together.

Group 3: Tennis racquet equipped with an attachment of hooks having an average height of at least 1.85 mm, average diameter of at least 8.25 mil, 250 hooks per square inch, average hook depth of at least 0.6 and “a rubber backing with a pressure sensitive adhesive for detachably mounting the attachment of the racquet” as prescribed by claims 6 and 9, which claims of the group do not stand or fall together.

Group 4: The method of retrieving grounded tennis balls with a tennis ball equipped with a ball retrieving attachment attached along an outer peripheral edge of a shoulder of the tennis racquet as defined by method Claims 10-15, the claims of which do not stand or fall together.

Group 5: The tennis ball attachment of Claim 8 and the method of retrieving a ground tennis ball of Claims 11 and 13-15, the claims of which do not stand or fall together.

Argument (All Claims and All Issues)

35USC103(a)-(First Rejection)

The 35USC103(a) rejection of claims 1, 4, 6, 7, 9, 10 and 12 as unpatentable over U.S. Patent No. 4,834,393 to Feldi, or French Patent No. 2,594,037 to Musslin, and either in view of U.S. Patent No. 5,077,870 to Melbye, U.S. Patent No. 6,401,997 to Smerdon and appellant’s admission of the prior art remains in error and should be reversed.

35USC103(a) - (Second Rejection)

Similarly, the finally rejected claims 8,11 and 13-15 as being unpatentable over *Feldi*, *Musslin*, in view of *Melbye*, *Smerdon* and Appellant’s admission of the prior art in his specification in view of the *Urwin* U.S. Patent No. 4993,712 under 35USC103(a) remains in error and should be reversed.

The application on appeal is a continuation application of parent application number

09/655,743. The issues on this appeal are essentially the same (except for the citation of the *Smerdon* patent) as those before the Board of Patent Appeals and Interferences (The Board) in Appeal Number 2004-2020 in which all of the Examiner's rejections of essentially the same claims were reversed in toto by the Board. The appealed claims herein are almost identical to those of the prior appeal except for that the more encompassing "comprising" wording of the parent application independent claims 1 and 10 are now restricted by "consisting essentially of" wording of the appealed claims herein. After receiving the favorable ruling by the Board and not timely receiving the anticipated Notice of Allowance, upon inquiry appellant's attorney was informed that the Examining unit disagreed with the Board's opinion and would more than likely undertake a different prosecution approach in order to reject applicant's claims under 35USC103(a). The two 35USC103(a) final rejections of this appeal are almost identical to the two previous 35USC103(a) final rejections of Appeal Number 2004-2020 except that a new reference *Smerdon* has now been cited as an alternative secondary reference to *Melbye* in the first office rejection and as part of a secondary reference combination with *Melbye* and appellant's alleged admission of the prior art in the second 35USC103(a) final rejection of record.

The 35USC103(a) defects of the two alternative primary 35USC103(a) references (i.e. *Feldi* and *Musslin*), at best, still provide no more than a generalized generic teaching that some hooked fastener should be used as the retrieving attachment (e.g. see page 5, lines 10-13) still remain the same as in the former appeal. ***Feldi* and *Musslin* still lack "any teaching or suggestion that hook size (i.e. monofilament diameter, hook height, hook width, and hook depth) are of any particular concern therein"** as astutely noted by the Board in the parent appeal. Similarly, the lack of concern or importance of hook size by *Musslin* remains unchanged. The immateriality of hook characterization and the generalized teachings that any hook or sticky material of *Musslin* and *Feldi* as held by the Board of Appeals in the parent appeal remains the same.

In combining the cited *Melbye* with either *Feldi* or *Musslin* under the 35USC103(a) rejections **there still exists a failure "to recognize that the fact that a claimed species or**

subgenus is encompassed by a broadly disclosed prior art genus is not sufficient by itself to establish a prima facie case of obviousness, especially where, as here, the appellant has provided evidence indicating that the particular hook size of the hook material of the present invention is needed to provide sufficient hook tenacity, deeply penetrate the pile of a tennis ball and consistently held the ball after hooking and during lifting of the hooked ball from the ground”.

The newly cited *Smerdon* likewise neither mentions nor considers specific hook size and characterization to be of any concern in attaching a loop material enveloping a drinking or watering outlet to a hooked material secured to a bicycle handlebar stem so as to render the drinking tube readily accessible to the cyclist. *Smerdon* mentions that because the watering tube outlet may create wet conditions, a “hook and loop fasteners” having ... “a pressure sensitive adhesive backing in wet and warm conditions such as the 3M SJ3526 and SJ3527 industrial fasteners” works well in this application. Even though there exists a broad genus of hook and loop fasteners equipped with pressure sensitive adhesive backing suitable for application of a tennis racquet or other adhesive compounds, it has been incorrectly theorized that since the Wimbledon and U.S. Open matches are conducted under wet conditions (apparently meaning in the rain), the skilled artisan would apparently choose the SCOTCHMATE SJ3526 or SJ3527 backing to overcome the “wet and hot” tournament match conditions, notwithstanding no other reason to justify the selection of a needle-in-a-haystack hook component amongst a very broad genus of hook and loop fasteners.

There still exists an improper treatment of the patent teachings by the piecemeal selection of isolated patent phrases and use of a theorized conclusion (without the required proof that the artisan would inherently do so) to arrive at appellant’s claimed invention by making random choice selections solely suggestively derived from appellant’s own teachings and not the prior art. The fact that *Urwin* has “nothing therein which overcomes or provides for the deficiencies” ... of the prior art still remains (as noted in the parent appeal) upon this appeal. There exists no basis to overturn the Board of Patent Appeals and Interferences decisive holding in the parent

application appeal that:

“we agree with appellant that in searching for an incentive for modifying the tennis racket of Feldi or Musslin the examiner has impermissibly drawn from appellant’s own teachings regarding the deficiencies of the prior art and fallen victim to what our reviewing Court has called “the insidious effect of a hindsight syndrome wherein that which only the inventor has taught is used against its teacher.” W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1544, 220 USPQ 303, 313 (Fed. Cir. 1983).”

Appellant’s attorney respectfully submits that the *Smerdon* patent does not overcome the prior defects of the former appeal and that both 35USC103(a) rejections still fail to fulfill the standards of patentability as commanded by Title 35, the M.P.E.P. guidelines as well as the established case law, and therefore should be reversed.

The three basic elements needed to establish any prima facie case of obviousness (per M.P.E.P. 2142) are still lacking:

- a) there must exist suggestions or motivations to modify the references or combine reference teachings;
- b) there must be a reasonable expectation of success both as to application and results;
- c) the prior art references when combined must suggestively teach all of the claimed limitations.

Appellant’s Claimed Invention as a Whole (Claims 1, 4, & 6-15 and All Issues)

A major problem with the 35USC103(a) rejections of record rests upon a failure to examine the prior art, as a whole, as well as appellant’s claimed invention, as a whole. This results in piecemeal examination of the prior art and appellant’s claimed invention. Appellant’s claimed invention, as a whole, provides many untaught features and unexpected results which heretofore were taught and believed to be impossible, which factors are the antithesis of obviousness.¹ The prior art is devoid any teachings that an unknown tennis ball attachment **30** (a highly specific species) equipped with uniquely and distinguishable pre-shrunk nylon monofilament hooks **31**, when applied as a strip to the inwardly curving convex shoulder **12**

(position which can only yield a single tangential contact site with tennis ball surface) of a tennis racquet **1** would have the unexpected cooperative affinity of being capable to repeatedly engage onto the nap **N** of the tennis ball **T** and repeatedly lift all of the major brands of tennis balls **T** without destroying the tennis ball cover. Appellant's discovery constitutes an unexpected result, especially when viewed over what was disparagingly taught by the art of record² as not feasible.

Unlike all other tennis ball retrieving devices suggested by the prior art, the design and nature of Appellant's attachment **30** when used in combination with the streamlined design of a conventional tennis racquet **1** does not detract from the player's effective use of the tennis racquet **1**. The strip or ball attachment **30** adhesively affixed to the shoulder **12** does not unbalance the tennis racquet **1** or create undue weight or drag upon the streamlined racquet **1**. The attachment **30** (as claimed) allows the tennis player to use the racquet **1** as it was professionally designed. Unlike the bulky attachments of the prior art (e.g. see cupping the ball or grasping mechanism of *Urwin*) which were regarded by all of the meritorious and enabling patents (prior and after appellant's invention) as necessary in order to achieve any retrievability, a non-intrusive ball retrieving attachment **30** comprised of a thin strip of unique pre-shrunk nylon monofilament hooks **31** placed upon the racquet shoulder **12** allows for repetitive ball retrieval simply upon tangential contact (as illustrated in Appellant's figures 2B and 4) of the tennis ball nap **N**.

All of Appellant's claims 1, 4, and 6-15 include highly specific claimed limitations of a very precisely defined tennis ball retrieving attachment **30** equipped with a one-of-a-kind hooked material **31** which, as disclosed in Appellant's specification and substantiated by Appellant's comparative test results of Appellant's example and the Rule 132 Affidavit of Record, reveals and proves the unique and totally unexpected efficacy of repetitively engaging and lifting all major tennis ball brands at a loaded weight capacity of 4-6 times the tennis ball weight. The hooks **31** allow a unique penetration of the tennis ball pile **N**, engagement and release of the pile **N** upon retrieval, a truly unique combination.

With particular reference to appellant's specification Figure 5, Claims 4, 6 and 9 prescribe in greater specificity the unique pre-shrunk nylon monofilament hooked material **31** of the unique attachment **30** defined as having:

- a) an average hook height **h** of at least 1.85 mil;
- b) an average hook width **w** of at least 1.0; and
- c) an average hook depth **H_d** of at least 0.6.

The discovery of a tennis ball retrieving attachment **30** possessing these attributes and the effect these attributes will have upon a material totally alien (i.e. a tennis ball nap **N**) without intended mating loop upon tangential contact so as to effectively lift all tennis balls, strictly constitutes Appellant's contribution amongst unbeknownst prior art teachings. The unexpected hooking and lifting affinity of Appellant's claimed attachment upon a grounded tennis ball is undisclosed and untaught by the art of record and accordingly constitutes Appellants sole contribution.

There exists no teaching in the prior art which would remotely teach or suggest any method for tangentially hooking and lifting all major tennis ball brands with a ball retrieving attachment possessing those highly unique claimed embodiments (e.g. see figure 5) as defined in even more precisely the highly limited and precise monofilament hook material prerequisites as one having an average monofilament diameter characteristic of:

- a) at least 8.0 mil;
- b) an average hook height of at least 1.85 mm;
- c) an average hook width of least 1.0 mm; and
- d) an average hook depth of at least 0.6 mm

with the hooks **31** being of a spiral configuration arranged in repetitive rows of at least 250 hooks per square inch as prescribed by independent method claims. The dependant combination claims 4, 6 and 9 and method claims 10-15 define with greater specificity the uncommon and unique characteristics of a one-of-a-kind pre-shrunk nylon monofilament hooked material **31** species (undisclosed other than by a hook and loop fastener combination by any of the patents relied upon in the 35USC103(a) rejections of record) which because of the unique, atypical

compositional and structural characteristics of the hook material **31** tenaciously penetrate and hook onto all brands of tennis ball pile **N** and will allow all major brands of tennis balls **T** to be repetitively lifted without fail and thereby consistently retrieved without damage by the tennis player. The unique interrelationship between Appellant's ball retrieving attachment **30** and the tennis ball nap **N** constitutes an unknown relationship and unsuggested combination which yielded totally unexpected results.⁷ The unexpected phenomena of engagement and hooking commences upon tangential contact of the tennis ball nap **N**. The uniquely different average hook height **h**, the average hook depth **H_d**, the average hook diameter **d**, the average hook width **w**, coupled with the pre-shrunk nylon monofilament characterization, in combination with the spacial configuration arrangement in rows of at least 250 per square inch characterizes a uniquely distinctive cooperative interrelationship with the tennis ball nap **N** of all major brands which uniquely allows the hook material **31** to tenaciously and repeatedly engage the tennis ball nap **N** without fail, while attempts by all others consistently failed. None of the one-of-a-kind claimed prerequisites of the nylon monofilament hooked material **31** are disclosed by any of the patents relied upon the 35 USC 103(a) rejections of record. The amazing ability to tangentially lift four to six times a tennis ball's original weight is totally unexpected, especially when the very art relied upon the Examiner concludes that such hook materials especially the thermoplastic hook materials are unsuited for such a use.

Appellant's method claims 10-15 are further directed to adhesively applying (i.e. step b) a unique tennis ball attachment **30** including a strip of hooked material **31** to the shoulder **12** (a shape non-conforming to the shape of a tennis ball) to a tennis racquet **2** which allows the tennis ball player upon tangential contact to engage onto the pile **N** of the tennis ball **T** and to permit the tennis ball **T** to be repetitively lifted by the ball retrieving attachment **30**. Prior to Appellant's invention, none of the ball retrieving attachments were capable of producing such an unexpected result.⁷ The unexpected results of Appellant's invention is part of the invention *as a whole* and is clearly elucidated in Appellant's specification, as well as being set forth in the Appellant's Rule 132 Affidavit of Record.

Any proper 35USC103(a) rejection must necessarily flow from the prior art teaching as interpreted or understood by the ordinary artisan without any reliance upon Appellant's own teachings to provide the necessary guidance and motivation leading to the inventive concept. Unfortunately, the patents relied upon in the 35USC103(a) rejections of claims 1, 4, and 6-15 have been simply randomly gleaned for isolated patent teachings, (taken completely out of the context in which the teachings are found) and then discordantly combined with each other (as an improper 35USC103 patent or reference combination) in a manner totally contradictory to the very patent teachings which are relied upon in making the 35USC103(a) rejections of record.¹ The rationale for combining the isolated patent teachings stems solely from Appellant's teachings and claimed subject matter which only in retrospect may be seen to bear some sort of semblance amongst otherwise clearly discordant prior art patent teachings³. This constitutes nothing more than hindsight obviousness.

The invention, as a whole, is indeed most unexpected as well evidenced by the very art relied upon in this appeal which resoundly teaches and suggests that what appellant has accomplished cannot be done.

Factual Analysis and Evaluation of Cited Prior Art Teachings (All Issues and All Claims)

In order to ascertain the relevant suggestive teaching of a cited patent and determine what, if any, motivation may be suggested thereby, it is necessary to first factually analyze what each of the respective patents teach and whether these teachings (when viewed as a whole, as well as the prior teachings as whole) may be properly relied upon (singularly and collectively) as suggestive teachings in a reference or patent teachings combination under a 35USC103(a) rejection. Absent the necessary teachings and suggestions to combine the patent teachings, as a whole, there exists no motivation to combine the patent teachings⁴.

Pursuant to this factual analysis, the attention of the Board of Appeals is accordingly and courteously directed towards the following:

Feldi Patent Facts (Relevant to All Issues and All Claims)

1. **FACT** - The *Feldi* ball gripper concept of "using the two components of VELCRO or any

brand hook and loop fastening system” as taught in the *Feldi* abstract” means precisely that both the mating fastening hook and loop components must be used together in the *Feldi* ball retrieving fastener system. There is nothing in *Feldi* which teaches a hook component should be used or would work alone in the absence of the loop component of the fastener combination or fastening system. *Feldi* neither expressly teaches nor suggests equivalency between each and every hook amongst the host of known mating two-component hook and loop systems. Any equivalency as taught by *Feldi* exists solely in the hook and loop “fastener system” itself. The “system” (not the hook alone nor the loop alone) is the *Feldi* “fastening system”. *Feldi* solely teaches the conjoint use of both the hook and loop fasteners together and does not in any form or manner suggest using a hook alone since, as taught by *Feldi*, the hook component does not work by itself (i.e. tangentially engage and lift a grounded tennis ball). *Feldi* does not establish any relationship of hook and loop fastening systems for an entirely different purpose and entirely different combination, and does not establish any equivalency between different materials¹⁰.

2. **FACT** - The primary reference *Feldi* (in reference to U.S. Patent No. 3,874,666 to Ross) concludes that, a hook material (a stainless steel wire type...commercially available under the trademark MID-TEMP VELCRO) when affixed to the end of a tennis racket does not effectively pick up standard tennis ball with this system, in “the standard material”(i.e. meaning the ball covering) “is not compatible with the hook fastener system... that, the hooked material destroys the tennis ball covering.” (e.g. see Col 1, lines 15-25)¹² Therefore, Appellant’s claimed invention is totally unexpected in view of the *Feldi* teachings^{7&12}.
3. **FACT** - The *Feldi* solution to the problem is to use the hook and loop fastening system in its intended cooperative manner by eliminating the conventional tennis ball pile or nap covering and replacing the tennis ball pile covering with either the loop or hook component and then use the other fastening system component upon the racquet so that

the hook and loop components effectively hook and fasten together as intended in the hook and loop fastening system (e.g. see *Feldi* abstract and claim). Both the mating hook and mating loop fastening system must be used together in *Feldi*. There is no suggestion, teaching or motivation by *Feldi* that the hooked component may be used separately apart from the mating loop component. Applying the Examiner's final rejection rationale, *Feldi* teaches that a VELCRO hook material does not work alone and therefore there exists no need to try it.

4. **FACT** - Appellant's claims recite a ball retrieving attachment "for engaging and lifting a grounded *tennis ball* upon **tangential contact** with said *tennis ball* ... for engaging and lifting the grounded *tennis ball* upon tangential contact with said hooks", which constitutes the antithesis of what *Feldi* teaches and suggests to the ordinary artisan.
5. **FACT** - The altered ball of *Feldi* is not a tennis ball (nylon hook or loop cover), since a tennis ball by standard of identity "must be covered with felt." Felt is notoriously known and defined as "a cloth or fabric made of wool, or of wool and fur or hair" (e.g. see Appendix Exhibit C. Neither the hook component nor loop component of *Feldi* comprises wool (e.g. see Appendix Exhibit D). Therefore, the altered ball of *Feldi* is not a tennis ball and does not meet the claimed "tennis ball" requirements of Appellant's claims. (See Appendix Exhibit E of Wilson Sporting Goods' statement as to tennis ball standards of identity which defines a tennis ball as having a wool pile cover).
6. The claimed cooperative elements of appellant's attachment claims 1, 4, 6-9 and appellant's method claims 10-15 are prefixed by the term "consisting essentially of" (not "comprising") meaning these claims embrace only the basic and novel aspects of appellant's claimed invention (i.e. a highly specific hooked material of a unique characterization having an unexpectedly superior efficacy in the retrieval of major brands of tennis balls as recited) and therefore the claims preclude both the *Feldi* tennis racquet with the attached unworkable VELCRO hooks or the *Feldi* method of use which requires both the hook and loop fastener combination.

7. **FACT** - *Feldi* neither discloses nor remotely suggests “a ball retrieving attachment attached to a shoulder of the racquet in ball retrieving position” characterized as “a series of preshrunk nylon monofilament hooks... having a monofilament diameter great than 8.0 mil and an average hook height of at least 1.70 mm.” which upon tangential contact with the tennis ball felt cover engages the pile and thereupon allows the ball to be lifted thereby. *Feldi* states unequivocally that the hook components of the type as known and understood by *Feldi* do not work alone (e.g. see Col. 1, lines 15-24)¹.
8. **FACT** - Two significant and material claimed limitations (i.e. tennis ball) *tangentially engaging and lifting a grounded tennis ball* (i.e. wool pile) with a very unique narrowly defined tennis ball retrieving attachment equipped with precise hooked material (Claim 1 diameter greater than 8.0 mil, average height at least 1.70 mm; Claim 10 diameter at least 8.0 mil, average hook height at least 1.85 mm; average width at least 1.0 mm; and average depth at least .6 mm and at least 250 hooks per square inch of spiral configuration arranged in repetitive rows) are neither disclosed nor remotely contemplated by *Feldi* nor any of the other patents relied upon in the 35USC103(a) rejections of record. As noted in the Board of Appeals decision, the character of the hook component or loop component is of no concern to *Feldi* in that any hook and loop fastener system will work.
9. **FACT** - Appellant’s results are completely unexpected in light of *Feldi*’s prior art teaching that a Velcro hook material will not work and the need to completely alter or replace the tennis ball pile covering with a loop component covering or vice versa so that the two mating hook and loop components of the fastening system will then hook, loop and engage onto one another in the manner in which they were designed and intended to function..
10. **FACT** - The *Feldi* patent teachings as applied to the final rejection of appellant’s claims 1, 4, 6, 7 and 9-15 cannot be applied against appellant’s claims without destroying the basic and novel teachings (i.e. replace wool pile covering with Velcro), as well as the

- essence of the *Feldi* patent (i.e. the need for both the hook and the loop of the fastening system).¹
11. **FACT** - In combining the *Feldi* patent teachings with any other cited patents of the 35USC103(a) rejection, the essential *Feldi* teachings cannot be totally disregarded or omitted, namely, from an essential use of the two component hook and loop fastening system together which necessarily requires changing the tennis ball cover to either a hook or loop component as applied in the 35USC103(a) reference combination. The 35USC103(a) rejections by the Examiner *ipso facto* render the *Feldi* teaching inoperable and unfit for its intended function and purpose if, in fact, the cover remains unchanged as must necessarily conclude in any reasonable interpretation of *Feldi* teaches to the ordinary artisan.¹
 12. **FICTION** - The final rejection assumption that the Velcro hook and loop fastener combination material as defined and used by the *Feldi* is an equivalent to the narrowly defined hooked material as prescribed by Appellant's claims misstates the underlying premise (i.e. teachings and suggestions) that *Feldi* solely and essentially discloses the combination of both the mating hooked and mating looped components (a genus) used together and not separately.¹⁰
 13. **FACT** - *Feldi* has no relevancy to a specially designed hook material by itself, *Feldi* prescribes only the combination of a mating hook component and mating loop component system which defines a genus without any concern to a particular hook character (species) except other than the genus fastening combination.
 14. **FACT** - Neither the ball retrieving attachment nor the hooked material as defined by *Feldi* perform the same function as Appellant's narrowly defined and uniquely different hooked material and, therefore, it cannot be regarded to be the equivalent to the claimed ball retrieving attachment or hooked material of Appellant's claims.¹⁰ The mere fact that a product brand is called a SCOTCHMATE or VELCRO or any other brand name in defining a two component hook and loop system (e.g. genus) does not render the hook

and loop systems or the respective hook materials *ipso facto* equivalent to one another or embrace a species, since as shown by the Appellant's affidavit, *Melbye et al* mushroom type fasteners do not work as do not all the other generic hooked materials except the very limited, one-of-a-kind hooked attachment (species) as prescribed by appellant's claims 1, 4, and 6-10.¹⁰

15. **FACT** - Inherency cannot be presumed but must be proven by the prior art, not by Appellant's contribution, M.P.E.P. 2112.
16. **FICTION** - The final rejection implied assumption that the VELCRO hook material (a broad genus) as defined and used by the *Feldi* is an equivalent to the narrowly defined hooked material (a species) as prescribed by Applicant's claims is legally and factually wrong. If it were, it would work by itself.
17. **FICTION** - The final rejection statement "it is old and well-known in the tennis art to pick up a standard tennis ball with a hook material affixed to the end of a tennis racquet (see Col. 1, line 15-25)" clearly misrepresents what both *Feldi* and *Ross* was known in the tennis art up to and after appellant's patent application was filed. Appellant's claims are directed towards a highly specific one-of-a-kind "pre-shrunk nylon monofilament hooks" of a unique structure which possess unexpected efficacy in engaging a lifting all grounded major tennis ball brands from a tennis court. *Feldi* in Col. 1, lines 15-25 refers to Figure 1 of U.S. Patent Number 3,874,666 to *Ross* which describes hooked patch 16 of "stainless steel wire type" ... "commercially available under the trademark MID-TEMP VELCRO (e.g. see *Ross*, Col. 2, lines 11-18) which *Feldi* states clearly as being incompatible with the tennis ball cover and destroys the nap just upon a few retrievals.

The following facts underlying the French *Musslin* Patent teachings are deemed relevant towards an ascertainment as to what it teaches as a whole, what motivation it may suggest to the ordinary artisan and the 35 USC 103(a) rejection of record.

Musslin Facts (All Issues and Claims)

1. **FACT** - The teachings of the *Feldi* patent (filed December 27, 1987 and patented May

30, 1989) and *Urwin* (patented February 19, 1991) summarize the technology and prior art as commonly understood by the ordinary artisan after the *Musslin* patent (registration date of 02/07/1986) was published and, therefore, *Feldi* and *Urwin* accurately summarize the state of the known art after the *Musslin* patent filing date (i.e. VELCRO or any other monofilament hooked material will not tangentially engage and effectively lift and retrieve tennis balls). This commonly accepted prior art understanding is in complete accord with Appellant's background of the invention disclosure as summarized in page 1, line 5 - page 4, line 8, of appellant's application as well as an excellent summary as of the state of the prior art as of May 17, 2002, as ambly elucidated by William Lamson, in U.S. Patent Number 6,652,397B1 of Exhibit H.

2. **FACT** - The *Musslin* patent fails to provide any tangible information as what constitutes a suitable cloth (wrapper) with hooks (including metal fastening threads) which may be utilized in the French patent. The specific size and character of the hook material other than its genus character is of no concern to *Musslin*.
3. **FACT** - The *Musslin* patent all encompassing genus teachings fail to provide any enabling teachings (i.e. as prescribed by 35 U.S.C. 112) so as to enable anyone of ordinary skill to make and use a non-enabling catchy or sticky substance of the *Musslin* invention much less a unique and unknown tennis ball retrieving species.
4. **FACT** - Both *Urwin* and *Feldi* (filed after *Musslin*, as well as the *Lamson* patent teachings) teach that the hook component will not work upon tangential contact and accordingly there exists no other basis besides speculative innuendos to ascertain what *Musslin* had in mind other than an unlimited genus.
5. **FACT** - *Musslin* neither discloses nor remotely teaches use or Applicant's claimed ball retrieving attachment (a species) "consisting essentially of a hooked fastener material having a series of pre-shrunk nylon monofilaments ... of ... "an average diameter greater than 8.0 mil and an average hook height of at least 1.70 mm (claims 1-9) or the method claim 10 limitation of an average:

- height of at least 1.85 mm (also claims 4-8 and 10-15)
 - diameter of at least 8.25 mil (also claims 4-8 and 10-15)
 - hook width of at least 1.0 mm (claims 4-8 and 10-15)
 - depth of at least 0.6 (claims 4-8 and 10-15)
 - at least 300 hooks per inch squared (claim 9)
 - at least 250 hooks (claim 10)
6. **FACT** - *Musslin* leaves the artisan completely in the dark as to what works and what does not work which in light of the *Feldi* teachings indicates *Musslin* is nothing more than a conceptual paper patent leaving the artisan to a myriad of fortuitous applications which, as taught by both *Urwin* and *Feldi*, don't work (without increasing significantly the surface area of contact or ball cover) as further substantiated by the *Lamson* patent critique of the prior art.
 7. **FACT** - Essential claimed elements of Applicant's claimed ball retrieving attachment and hooked material are neither relevant nor disclosed by *Musslin*.
 8. **FACT** - there exists a myriad of fastener combinations (a broad genus) involving a host of different hook and loop fastener combinations including different types of hooks and loops all of which are especially designed to function as paired units in paired systems.
 9. **FACT** - The all encompassing and non-enabling *Musslin* teachings that "forms, dimensions and positions of different elements, and the type of material used for hooks could vary within certain limits, without changing the general conception of the described invention" teaches nothing nor adds anything beyond the fact that no artisan knows what *Musslin* had in mind by the vague, indefinite and universal all encompassing (genus) teachings of *Musslin*.
 10. **FACT** - the paucity of the *Musslin* patent teachings is further evident the final rejection assumption that "*Musslin* does not disclose the concept of covering the tennis balls with a different material," therefore "the *Musslin* racquet is considered to be used with standard tennis balls" (one can only guess what *Musslin* had in mind).

Analysis of Melbye Facts (All Issues and Claims)

A factual analysis of the *Melbye et al* Patent teachings reveals the following facts:

1. **FACT** - The prior art teachings of Column 1 line 15-23 defining “widely used garment fasteners under the trademark VELCRO... and under the trademark SCOTCHMATE refers solely (as in *Feldi* and *Smerdon*) to combined use of the mating hook component and the mating loop component as fasteners which are designed to matingly engage and fasten together. These teachings have no relevancy to the individual garment fastener components or their separate use. The teachings of *Melbye, et al* as cited and relied upon in the final rejection simply means that the hook and loop components, when used together, serve as “garment fasteners.” This is no different than the required “hook and Loop fastener system” of *Feldi*. To rely upon their inseparable teaching (hook and loop fastener systems or garment fasteners) to establish equivalency between all hook components is factually and legally wrong.¹⁰ A genus disclosure does not define a species under 35USC103(a).
2. **FACT** - The *Melbye* mushroom type hook strip is not a “hooked fastener material having a series of preshrunken nylon monofilament hooks... characterized as having a monofilament diameter greater than 8 mil and an average height of at least 1.70 mm.”, as should be self evident by a comparison of Appellant’s Figure 5 with the *Melbye, et al* Figure 2. Appellant’s claimed hooked material is entirely different from the *Melbye, et al* mushroom type fasteners as clearly revealed by *Melbye, et al*, as well as Appellant’s disclosure and the Rule 132 Affidavit of record.
3. **FACT** - The *Melbye, et al* mushroom type fastener is a blow molded (e.g. see Col 5, lines 35-50) processed under specialized conditions, preferably of a copolymer of polyethylene and polypropylene (e.g. see Col 5, lines 4-10), and not pre-shrunken nylon monofilament hooks of a specific characterization as claimed by Appellant.
4. **FACT** - The *Melbye et al* mushroom type strip when applied as a hooked fastener does not work, as clearly evidenced by Appellant’s Rule 132 Affidavit.

5. **FACT** - The *Melbye* mushroom type strip (defined and shown as upstanding stems with a mushroom head - Col. 2, lines 48-50) is not an actual and obvious equivalent to the unique and distinctly monofilament nylon hook fastener materials as defined by Applicant's claim. (Equivalency must perform the same functional result.)¹⁰
6. **FACT** - Merely by reason that *Melbye et al* discloses a host of different types of garment fasteners (genus) sold under the different brand labels, including both the hook and loop fastening system and the mushroom type fasteners, does not mean that all hook and loop fasteners or mushroom type fasteners are the actual and obvious equivalent to one another as evidenced by Applicant's 132 Affidavit. This is further self-evident by the procurement of the *Melbye et al* patent rights to mushroom-type hook strip claims predicated upon unique compositional and manufacturing conditions which reportedly yield fasteners of superior break force, shear strength and T-Peel properties.
7. **FACT** - To apply *Melbye* as a 35USC103(a) reference as currently of record requires a total disregard of the essence of the *Melbye* patent, (i.e. replace the mushroom type fastener with an unrelated and completely different nylon monofilament hook component of totally different hook characteristics), and a hindsight reliance upon Appellant's invention to reconstruct selective *Melbye* passages in a hypothetical meaning never intended by *Melbye, et al.*
8. **FACT** - The *Melbye et al Patent* contains no suggestive teachings that its mushroom type fastener or any other "garment fastener" may function as a ball retriever for a tennis ball.
9. **FACT** - *Melbye* teaches the enormity of the hook and loop fastener (a genus) art as it has developed throughout the last fifty years or more. Manufacturing and compositional variations in the manufacture of the hook and loop fasteners leads to a myriad of different types of hook and loop fasteners, all of which have resulted in the spawning a multitude of manufacturing sites throughout the world processing a vast number of different types of commercially available worldwide hook and loop fasteners.

10. **FACT** - *Melbye* teaches that there exists a vast array of different hook and loop fastener systems, that the processing and compositional characteristics of the starting raw materials may be diverse and that how these compositionally different materials and the manner in which these materials are actually processed will have a pronounced effect upon the ultimate characteristics of the manufactured hook and loop fastener product. Exemplary manufacturing and compositional characteristics for significantly altering the hook and loop fastener end product as taught by *Melbye* include:

- A) a vast array of different thermoplastic resins as mentioned by *Melbye* including the polyesters such as poly(ethylene terephthalate), polyamides such as nylon, poly(styrene-acrylonitrile), poly(acrylonitrile-butadiene-styrene), polyolefins such as polypropylene, and plasticized polyvinyl chloride, and a preferred thermoplastic resin is a random copolymer of polypropylene and polyethylene containing 4% polyethylene and having a melt flow index of 7.0, ...”.
- B) the temperature control (e.g. heating and cooling) during each stage of the thermoplastic resin processing (e.g. molten and solidifying in critically timed sequences) as utilized in the manufacture.
- C) the birefringence value, if any, imparted to the hook and loop components during the manufacture.
- D) should injection molding, monofilament extrusion, vacuum or non-vacuum conditions, what size and characteristics should be created for the hooks and loops, should tension and what degree of tension be applied upon the hook and loop filament formulation during the melt, the semi-solid state and solidifying stages of the process etc. (all of which diverse factors are taught or suggested by *Melbye* as being important processing variables) be utilized in the manufacture of specific types of hook and loop fastener products?

11. **FACT** - *Melbye* discloses conventional hooked filaments are more prone to hook breakage than the *Melbye* mushroom type hook fasteners.
12. **FICTION** - an equivalency or a species relationship exists between all hook and loop fasteners and the mere fact a hook and loop fastener combination is mentioned (e.g. garment fasteners) establishes then that any hook material is equivalent (i.e. actual and obvious equivalent) to any and all other hook materials of any hook and loop fastener combination or garment fastener.
13. **FACT** - hook and loop fasteners (including garment fasteners) constitute chemical compositions in which genus and species distinctions are well engrained and cannot be viewed as mere mechanical elements simply by reason the two chemically different compounds may be classified as garment fasteners.

Pursuant to the 35 USC 103(a) requirement of a resolution of factual background before resolving the obviousness legal issues, the following *Smerdon* Patent facts warrant careful consideration.

Smerdon Facts (All Claims and All Issues)

1. **FACT** - the *Smerdon* patent does not pertain or remotely teach tangentially retrieving a tennis ball with a hooked material.
2. **FACT** - *Smerdon* does not remotely teach or suggest that any hooked material may be used by itself in the absence of its intended fastening looped counterpart.
3. **FACT** - There exists no teaching or suggestion in *Smerdon* (as with any of the cited patents) that the claimed pre-shrunken nylon monofilament hooks fulfilling one-of-a-kind and uniquely different claimed characteristics would have the heretofore unknown and unexpected efficacy to tangentially engage and lift all ground major tennis ball brands from a tennis court without damaging the ball. *Smerdon* has no concern whatsoever of

the hook component or its character other than its usual intended function to fasten onto its mating loop component.

4. **FACT** - There exists no reasonable expectation upon the basis of the *Smerdon* teachings that what had been generally recognized to be unfit for a specific purpose (tennis ball attachment) should be used simply by reason of an adhesive backing function (via theorized “wet” misdescription) for an unfit specific purpose to achieve an unexpected use and result.
5. **FICTION** - The skilled artisan would fortuitously disregard the unfounded speculative suspicion (based upon innocuous teachings) of a need for an adhesive suitable for use in wet and warm conditions as a hook and loop fastener combination for a bicycle handlebar stem and water bottle drinking tube outlet applications of *Smerdon*, prompted by an inaccurate motivating or suggestive factor that the Wimbledon and the U.S. Open tennis events are notoriously conducted under “wet and warm conditions” (note that Wimbledon and U.S. Open matches are promptly cancelled upon wet and rainy conditions) then equate to “hot, wet and damp conditions” and to “hot and humid”, all of which are then fortuitously equated to a specific hook and loop fastener (amongst a multitude of others) which maintains “good adhesion in wet and warm conditions” in which loop fastener component encompassing the wet water drinking tube outlet secures the “wet” watering tube outlet to handlebar stem via the hook and loop combination and then to selectively isolate a hook material from its loop component for no other reason than appellant solely teaches the need to do so and thereby be motivated to solely use a hooked component from its loop mate even though such hooked materials were notoriously recognized to be unfit for that purpose (i.e. tangentially engaging and lifting a tennis ball) all of which in

light of the prior art teachings would amount to nothing more than an exercise in futility, nonetheless the skilled artisan would undertake such a hypothetical task.

6. **FICTION** - The artisan is taught and suggested to undertake an exercise of futility in light of prior art which notoriously recognizes a component to be unfit or unworkable (i.e. hook fasteners are unfit) simply by reason a hidden and non-engaging factor (i.e. an adhesive backing having no relevancy to the hook component other than its use with the mating loop) would allegedly render the unworkable workable.
7. **FICTION** - The adhesive requirements involving a hook and loop fastener for a tennis racquet shoulder (most commonly of graphite or composite construction) can be regarded as the same or equivalent to those required by a handlebar stem (e.g. most commonly of a chrome plate and a often wet thermoplastic drinking tube outlet).
8. **FICTION** - The Wimbledon and the U.S. Open are played in “wet” conditions (i.e. the same “wet” conditions as a watering tube outlet of *Smerdon*) when in fact it is notoriously recognized that the Wimbledon and U.S. Open are postponed by rain and wet conditions, all of which strained speculative extrapolations and conjectures forms the entire basis of the hind-sighted reconstruction of the prior art (including *Smerdon*) so as to bear some semblance to appellant’s claimed invention.

Urwin Facts (Claims 8, 11 and 13-15 and Issues II, V, VI, IX, X, XII, XIII, XIV, XV, XVI)

1. **FACT** - *Urwin* does not disclose the essential embodiments of applicant’s invention, nor does *Urwin* teach that one would ever succeed with a ball retriever of hooked material by simply tangentially contacting, engaging and lifting a tennis ball with any hook material, let alone the uniquely defined ball retrieving attachment as precisely prescribed by Appellant’s claims 1, 4 and 6-15. As in *Feldi*, *Musslin*, *Smerdon* and *Melbye*, the hook

component is of no concern to *Urwin* (a genus disclosure) and there exists no recognition of appellant's unique hook.

2. **FACT** - *Urwin* teaches precisely the opposite from Appellant's claimed "tangential contacting" by stating that "a strip which follows the contour of the head of the tennis ball racquet has a curve diametrically opposite to the curve of the tennis ball, *meaning that only one small area of the strip can come in contact with the tennis ball, making it very unlikely that the ball can be grasped securely enough to be picked up.*" (e.g., see Column, 2, Lines 1-10). The words "unlikely that the ball can be grasped securely enough to be picked up" accurately summarizes the state of the prior art as it relates to thermoplastic hook materials prior to appellant's invention.
3. **FACT** - *Urwin* states that the most appropriate place "where the apparatus provides a means to attempt to grasp the tennis ball and that is at the butt end of the handle of the tennis racquet." (Column 1, Lines 61-64).
4. **FACT** - As stated throughout the *Urwin Patent* and as succinctly stated in Col 2, line 30, a key element of the *Urwin* invention constitutes:

"A removable ball gripping member which is configured in an arcuate shape conformed to the shape of the ball which is being retrieved, such as a tennis ball, and which further comprises gripping means to grasp the surface of the ball." **(emphasis added)**

as illustrated in Figure 6 of *Urwin*. In complete contrast to *Urwin*, Appellant's ball engaging and lifting strip attachment **30** follows a curve diametrically opposite to the curve of the tennis racquet shoulder **12** as illustrated in Appellant's Figures 2B and 4 so as to provide only a single tangential point of contact with the tennis ball **T**, which is a direct antithesis from *Urwin's* cupping or accurate shape conforming to the shape of the tennis ball teachings as illustrated by *Urwin's* Figure 6. The contacting surface of a tennis ball **T** with Appellant's claimed ball retrieving attachment **30** the attached to the tennis

racquet shoulder **12** at “a curve diametrically opposite to the curve of the tennis ball and *Urwin*’s ball conforming and cupping contact involve entirely different modes of operation, as is clearly illustrated by a comparison of Appellant’s Figures 2B and 4 with *Urwin*’s Figure 6.

5. **FACT AND FICTION** - Any reliance upon Col. 4, lines 8-13 of *Urwin* to reject claims 8, 11 and 13-15 is wrong since the cup shaped ball retriever **10** of Figure 3 includes a base having a Velcro strip **24** which allows the removable cup shaped retriever **10** of a tennis ball curvature to be attached or detached to the Velcro strip **30** as referenced in Col. 4, lines 8-13. VELCRO strip **30** is not the ball retrieving ball gripper **10** of *Urwin*. This removable feature is the second key element of *Urwin*’s ball retriever which is a fastening means **24** for the ball gripping member attached to the racquet, preferably at the butt of the handle as shown in *Urwin* Figure 6. The VELCRO strip **24** of Figure 1 as taught and disclosed by *Urwin* does not pick up the ball, but serves only as a mount for ball gripper **10** of *Urwin*. If it did, the entire *Urwin* teachings would become meaningless.
6. **FACT** - The essence of the patented invention of *Urwin* relies upon grasping the tennis ball surface within an “arcuate shape conformed to the shape of the ball” encompassing arcuate arm 16 and 18 by providing a cup shaped retriever **10** which envelopes over a large portion of the conforming tennis ball surface permits the tennis ball to be grasped and lifted thereby. These teachings are essential to *Urwin* and thus clearly lead the artisan away from Appellant’s unique and unexpectedly superior claimed ball retrieving attachment¹² and the method of its use of claims 10-15.
7. **FACT** - The applicant’s claimed invention of tangentially contacting, engaging and

lifting of the tennis ball cover with the unique claimed tennis ball strip **30** upon the convex, non-conforming rounded surface of a tennis racquet shoulder **12** is completely contradictory to the ball encompassing and grasping teachings of *Urwin*. More surprisingly are the unexpected results of Appellant's claimed invention, especially when viewed in light of *Urwin's* clear teachings that such an approach would make it very unlikely to effectively grasp and pick up the tennis ball. (e.g. see 2 above).⁷

8. **FACT** - Appellant's claimed invention relies upon entirely different principles and mode of operation and requirements from that disclosed by *Urwin*. (Cupping and grasping vs. tangential contacting and lifting.)
9. **FACT** - The removable ball gripping member "configured in an arcuate shape conformed to the shape of the ball which is being retrieved" teachings of *Urwin* constitutes an essential embodiment and teaching of the *Urwin* patent. Accordingly, it would be impermissible when relying upon *Urwin* to completely disregard these basic and novel *Urwin* teachings which, in fact, undermines the entire underlying rationale of the Examiner's position in the 35USC103 reference combination of the rejected claims 8, 11, and 13-15. A claimed invention which represents the antithesis of what the *Urwin* patent teaches constitutes a clear showing of unexpectedness and unobviousness.
10. **FACT** - Appellant's tangential contacting completely contradicts the need for the ball conforming teachings of *Urwin* (part of the prior art as a whole) and therefore, *Urwin* clearly teaches, directs and motivates the artisan away from the unique embodiments of Appellant's claims 1, 4, 6-7, and 9-15 as well as claims 8, 11, and 13-15.
11. **FACT** - The *Urwin* invention would be rendered inoperative (as taught by *Urwin*) by the replacement of the ball conforming retainer with the non-conforming tangential

contacting engaging and lifting embodiments of Appellant's claimed invention.¹

12. **FACT** - Appellant's tangential contacting and lifting embodiments are totally unexpected in view of *Urwin*'s teachings.¹²

Since the 35USC103(a) analysis requires an analysis of all the facts (including those which support the unobviousness), the aforementioned facts as taught by *Urwin* provides clear evidence of the unobviousness of the Appellant's claims 1, 4, 6, 7 and 9-15 as well as those claims 8, 11, 13-15.

EQUIVALENCY FICTION (All Issues and All Claims)

1. **FACT** - The "garment fasteners" referred to in the prior art dissertation of *Melbye et al* and the "VELCRO or any other brand hook and loop system" mentioned in the *Feldi* Abstract pertain solely to *paired and mating hook and loop fastening system of a two components system* which cooperatively engage and hook together and requiring necessarily that the two interlocking components of the system be used. These *Melbye* teachings merely describe a cooperative relationship of "garment fasteners" of the hook and loop fastener system which bear no relationship whatsoever to anything other than "system" and have no relevancy to any hooked component standing by itself, much less a uniquely different hooking material. This does not establish equivalency (actual and obvious) between all hooked components apart from that conjoint use of both the hook and loop components as a fastening system (i.e. any mere relationship of the system does not extend to a dissection of the hook component from the loop system). It merely discloses that the hook and loop fastening system when used together serves as a garment fastener. These teachings constitute a genus which as noted in the parent application appeal does not establish the required 35USC103(a) facts for a species.

2. **FACT** - Appellant has never acquiesced or stated that the ball retrievers as disclosed by the prior art are the equivalents (actual and obvious) to appellant's tennis ball retriever attachment equipped with uniquely different hooked monofilaments of the highly specified structure and characteristics as prescribed by Appellant's claims.
3. **FACT** - Appellant has never acquired that the hooked material of the appellant's ball retrieving attachment is equivalent to any other hooked material of any other hook and loop fastening system. The mere mentioning of a genus does not establish obviousness of a species possessing unexpected efficacy.
4. **FACT** - Appellant's Rule 132 Affidavit refutes, in total, the Examiner's unwarranted and unsubstantiated assertion that all tennis ball retrieving attachments of any hook and loop fastening system and that all hook components may be considered to be the actual and obvious equivalents to one another including Appellant's unique tennis ball retriever attachment.¹⁰
5. **FACT** - Contrary to the Office Action's implication, there exists a host of different substances (a genus) which heretofore were recognized by the art of record as incapable of tangentially engaging and lifting a tennis ball therewith, and that pursuant to these prior art teachings, tennis ball lifting efficacy could only be effectively accomplished by eliminating the ineffective metal hooks, by increasing the contacting surface in a cup-wise or grasping fashion so as to provide sufficient grasping surface with the ball so as to permit the hook fasteners to lift the ball thereby (*Urwin*) or by changing the ball and retrieving racquet to the two component hook and loop fastening system (e.g. *Feldi*).
6. **FACT** - Equivalency is clearly refuted by the cited art of record (including *Melbye*) which clearly states that the Velcro type fasteners (as applied generically) fabricated from

thermoplastic resins as used and applied by the prior art were incapable of providing the unexpected tangential contacting engaging and lifting attributes of Appellant's unique ball retrieving attachment of appealed claims 1, 4, and 6-15. Consistent with the unequivocal prior art teachings that a hook component (as a genus) of the thermoplastic hook and loop fastening system itself is incapable of achieving Appellant's claimed result, the uniqueness of the Appellant's ball retrieving attachment (a species) equipped with precisely characterized pre-shrunk nylon monofilament hooks as claimed herein provides a totally new and unexpected result within an art background consistently believing that it could not be done.

7. **FACT** - If none of the references of record have any concern or fail to disclose or define a unique ball retrieving attachment (a species) equipped with an undisclosed nylon monofilament hooked material attachment (as uniquely and distinctively claimed herein) which is uniquely and solely able upon tangential contact to lift all major tennis ball brands therewith with unexpected tenacity without destroying the tennis ball, there cannot be any equivalency or suggestive species teachings when, in fact, all of the references relied upon in the 35 USC 103(a) rejection fail to remotely disclose these unique claimed embodiments of Appellant's invention in sufficient detail so as to enable anyone of ordinary skill to make and use Appellant's unobvious invention.
8. **FACT** - Equivalency cannot be predicated upon an unexpected and unique function totally absent from all other functions as relied upon in the 35 USC 103(a) rejection and alleged to be equivalent.
9. **FACT** - The stainless steel VELCRO MID TEMP hooks disclosed in Figure 1 as described and taught by U.S. Patent Number 3,874,666 to Ross (Col 2, lines 11-18) and

taught as being unfit in *Feldi* (Col 1, lines 15-24) cannot be deemed equivalent to hook materials constructed of all thermoplastic resins (simply by reason of its VELCRO brand name, a genus) or even more remotely to the highly unique and distinctive claimed nylon monofilament hooked material (a species) of appellant's claims.

10. **FACT** - Equivalency is not established for any and all hooked materials simply upon the basis of mentioning VELCRO and SCHOTCHMATE as garment fasteners when used together as taught by *Melbye* or as taught by *Feldi* when one component is used to completely alter the tennis ball cover and the other component is utilized as an attachment.
11. **FACT** - Equivalency of all hooked materials cannot be established simply upon the basis that the hooked material is part of VELCRO or SCHOTCHMATE fastener combinations or any other hook and loop combination since the evidence of record clearly shows that no equivalency can be legally presumed or exists therebetween by reason only the uniquely different and highly specific nylon monofilament hooked materials as prescribed by appellant's claims possess a uniquely different and distinctive unexpected efficacy.
12. **FACT** - Equivalency cannot be established when only one unrecognized and highly unique material possess a unique and unexpected function amongst which none of the other materials amongst a vast and unlimited class of materials possess such a function and were notoriously recognized not to possess such a unique function.
13. **FACT** - The playing conditions at the Wimbledon or the U.S. Open are not equivalent to the environmental conditions surrounding a wet watering tube secured to a bicycle handlebar stem by a hook and loop fastener combination or even remotely as applied with a pressure sensitive adhesive backing to the stem and watering tube outlet.

No Prima facie Case of Obviousness (All Issues and All Claims)

Appellant respectfully submits that the art respectively relied upon in the 35USC103(a) rejections of Appellant's claims 1, 4, and 6-15 fails to establish a *prima facie* case of obviousness and especially when viewed within the context of the prior art, as a whole. The art of record clearly establishes an opposite conclusion, namely the unobviousness of the rejected claims. Even if the cited prior art were deemed sufficient to establish a *prima facie* obviousness, then the unexpected and astounding results of Appellant's claimed invention would clearly rebut any such *prima facie* case of obviousness. The essential suggestive nexus want between the genus and the species of the parent appeal still remains unchanged notwithstanding newly cited *Smerdon*. The same lack of concern of hook size or necessary understanding of any significance or interrelationship between a unique hook species (as opposed to the genus) and the woolen tennis ball pile remains untaught and of no concern to *Smerdon*.

The prior art facts of record (i.e. the cited patent teachings relied upon in the 35USC103(a) rejections) have been taken totally out of context in which they are found and combined (not because of what the prior art teaches) but rather solely by reason of Appellant's own unexpected and unknown teachings and discoveries.⁸ Any *prima facie* case of obviousness under a 35USC103(a) rejection requires at a minimum the existence of concrete facts (e.g. suggestive teachings of the unique hook) without resorting to speculative conclusions of untaught matters which only have any plausible meaning or rationale when viewed solely in light of an inventor's own discoveries or findings. The essential requirement of M.P.E.P 2142.03 that "to establish a *prima facie* case of obviousness, all of the claimed limitations must be taught or suggested by the prior art" has been completely ignored as evidenced by the repetitive need to rely extensively rely upon appellant's own teachings as a critical nexus of the 35USC103(a)

rejections and genus teachings which provide no guidance towards the unique species. Even more astoundingly is the fact that the appellant has taken an approach which all of the enabling and authoritative references of record have clearly stated will not work.

There exists no basis upon the cited art for an artisan to arbitrarily choose amongst a vast array of other hook and loop systems (a genus) a one-of-a-kind hooked fastener (a species) meeting the unique pre-shrunk nylon monofilament characterizations of claim 6 and further meeting the untaught and unsuggested claimed embodiments “of hooks mounted to a rubber backing with a pressure sensitive adhesive for detachably mounting the attachment to the shoulder of the racquet”. There exists no art or plausible reason why this detachable tennis ball retrieving attachment should be deemed obvious.

The method claims 10-15 involve a step (a) of providing a tennis ball retrieving attachment **31** meeting stringent claimed requirements completely undisclosed and untaught by the art of record. The method claims 10-15 require an unknown and unique interrelationship between a uniquely different pre-shrunk nylon monofilament hooks of an unique characterization having an unexpected cooperative interrelationship with the pile of a tennis ball to provide an unexpected efficacy in tangentially retrieving all major brands of tennis balls.

It is an axiomatic legal requirement (essential to any *prima facie* case of obviousness) that any proper 35USC103(a) rejection must be solely predicated upon what is fairly taught and suggested, as a whole, by those references or patents which are relied upon in the 35USC103(a) rejection without resorting to an Appellant’s own discoveries or teachings to provide crucial prior art teaching of claimed elements untaught and unsuggested by the prior art.” This basic patent examining premise prevents a 35USC103(a) examination from falsely relying upon a hindsight reconstruction of the prior art solely in view of Appellant’s own discoveries and inventions to

provide untaught and unsuggested matters. If the prior art fails to fairly teach or suggest what an Appellant has found (all claimed elements), then the final rejection lacks the necessary factual basis upon which to predicate a *prima facie* case of obviousness under 35USC103(a).

Appellant's own findings are not prior art teachings and there exists clear error under any disguise (including an alleged admission of equivalency) of relying upon Appellant's own findings and teachings as a basis for speculatively combining discordant patent or reference teachings under 35USC103(a). In applying each patent of the 35USC103(a), a non-sequitor equivalency is essential in order to eliminate the loop component from the "garment fastener, VELCRO, SCOTCHMATE hook and loop fastener combination" as applied to *Feldi*, *Smerdon* and *Melbye*. Another crucial factual hiatus rests on speculative assumptions that since all garment fasteners of the hook and loop type are equivalent, it presumptively follows that all hook components of the garment fastener systems or of the hook and loop fastener are equivalent under 35USC103(a). A single unsupported allegation is enough to establish a factually unwarranted and unsupported obviousness rejection. The final rejection of record rests upon a host of factually unsupported suspicions and interpretations which are neither supported nor technically accurate by the art of record.

Appellant's invention relies upon untemplated and uniquely different claimed features which are neither taught, suggested, nor remotely contemplated by any of the prior art patents of record (i.e. *Feldi*, *Melbye et al*, *Musslin*, *Smerdon* and *Urwin*). There accordingly exists no facts or motivation for one of ordinary skill to be lead towards those essential and unique embodiments of Appellant's claimed invention. Both 35USC103(a) rejections clearly recognize the failure of the cited patents to teach or suggest all of the claimed limitations as is essential for any prima facie case obviousness as prescribed by M.P.E.P 2143.03. The newly cited *Smerdon*

teaches a combined hook and loop fastener combination used in an entirely different environment with *Smerdon* not even being applied for its hook teachings of itself but rather by reason of its innocuous adhesive backing teachings which bears no relevancy to any of the critical claimed tennis ball retrieving aspects of appellant's invention. *Smerdon* as applied in the two final rejections directly contradicts what the learned prior art concludes cannot be done. The final rejections accordingly must necessarily resort to Appellant's own teaching in order to provide a basis to initially select such randomly gleaned and discordant teachings from each of the patents' and then improperly apply the doctrine of equivalency in which no basis for equivalency exists coupled with a mistakenly reliance upon an alleged admission of an art recognized equivalency (based on Appellant's own discoveries)¹⁰ to make any sense whatsoever as to why such isolated and discordant patent teachings (as relied upon in the 35 USC 103(a) rejection) may bear some sort of semblance towards Appellant's claimed invention. This clearly constitutes insufficient proof for a prima facie case of obviousness.

In evaluating the 35 USC 103(a) rejections it is important to avoid examining pitfalls of In re Wright - 9 USPO 2d 1649 (Fed. Cir. 1989) which sets forth a clear caveat against any "attempt to show a suggestion of the claimed invention" by "taking statements wholly out of context and giving them meanings they would not have had to one skilled in the art having no knowledge of Appellant's invention, or to anyone else who can read the specification with understanding." The correct factual analysis under 35USC103(a), requires a proper assessment of all of the prior art teachings, including those which teach away and those which cannot be reconciled with the Examiner's erroneous findings of fact or unfounded speculative conclusions of the final rejection. It is unrealistic, as was done herein, "to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts

necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.” In re Lunsford 148 USPO 721 (CCPA). It is also grossly unfair to an appellant to confront multiple fabricated equivalency arguments or segment elements of a generic combination never intended to be used separately (which must by necessity rely solely upon what the appellant has taught) and then by pure speculation assume that because the Wimbledon and the U.S. Open are conducted in “wet conditions” (i.e. played in rain which they are not) to randomly glean an adhesive backing (bearing little if any relevancy to the essence of appellant’s contribution and the status of the art as a whole as recognized by the ordinary artisan) which allegedly teaches an adhesive backing with good adhesion in “wet and warm” conditions for attachment of a wet watering tube to a bicycle handlebar stem using both the hook and loop fastener combination of *Smerdon* in combination with the genus garment fastener of a hook and loop fastener (*Melbye*) or the genus hook and loop fastener of *Feldi* all of which rest and depend upon the combined use (i.e. hook and loop) to achieve an undisclosed hook component species without any concern to hook size or character of the genus garment or fastener combination, all of which untaught fabrications allegedly provide the necessary factual findings for a 35USC103(a) rejection.

Melbye et al and French Musslin or Feldi Combinations

Smerdon and French Musslin or Feldi and Melbye et al Combination

(All Issues and All Claims)

Feldi Teachings and Suggestions (All Claims - All Issues)

Any examination of the *Feldi* teaching clearly reveals a complete lack of relevant teachings suggestive of “a ball retrieving attachment attached to a shoulder of the racquet in a ball retrieving position” so as to provide single site of tangential contact with a tennis ball **T**, as

illustrated in Appellant's figures, which attachment 30 as claimed comprises a series of monofilament hooks 31 having a diameter **d** greater than 8.0 mil and average hook height **h** of at least 1.70 mil (claims 1-3) or even more remotely a monofilament hook characterized as having a diameter at least 8.0 mm and average hook height 1.85 mm, an average width of 1.0 mm, and an average hook depth of at least .6 mm and at least 250 hooks per square inch of spiral configuration arranged in repetitive rows (e.g. see Figure 5). Such crucial facts as they relate to a unique engagement and disengagement of a grounded tennis ball are neither disclosed nor remotely contemplated by *Feldi* nor by any other patent of record (i.e. *Musslin*, *Melbye et al*, *Smerdon*, or *Urwin*). Turning more specifically towards those claims requiring an average hook height of at least 1.85 mm, a hook width of at least 1.0 mm, and an average hook depth of at least .6 mm (i.e. see claims 4-8 and 10-15), these saliently unique claimed features are also neither taught nor remotely contemplated by any references relied upon in the final rejections herein. The prior art teachings, as a whole and elaborated upon in appellant's specifications, clearly acknowledge what appellant has done cannot be done.

Feldi exclusively teaches and uses the mating hook and loop fastening system combination of the "VELCRO or any brand hook and loop fastening system" without any concern of the hook component. This paired hook and loop fastening system combination (a genus) alone forms the essence of the *Feldi* invention and what *Feldi* fairly suggests and motivates the skilled artisan to do. When combined with any other patent teaching, it is clearly improper to deem *Feldi* as teaching or motivating a skilled artisan to use only the hooked component of the hook and loop fastening system since such an untaught use would destroy the essence of the *Feldi* patent teachings and render it inoperative for its intended use.⁶ *Feldi* only teaches and motivates one of ordinary skill to use the hook and loop fastening system. *Feldi* clearly teaches the ineffectiveness and ball covering destruction via the prior arts futile attempts (e.g. *Ross*) to use matted steel hooks (VELCRO) to retrieve a grounded tennis ball. The reliance of *Feldi* runs afoul with the prima facie case of obviousness requirements that if the *Feldi* teachings as applied in the combined patents renders the basic invention modified unsatisfactory

for its intended purpose or changes the principle of operation of the *Feldi* patent or the change would render *Feldi* inoperative of M.P.E.P. 2142 (2100-99, Rev 1, Feb 2000).

Appellant's claimed ball retrieving attachment **30** equipped with pre-shrunk nylon monofilament hooks **31** of a precise character uniquely distinguishes the claimed attachment **30** from those known and unworkable tangential contacting tennis ball retrieving attachments (of which only the genus and no hook concern is taught) as notoriously reported by the art of record. Appellant's unknown tennis ball retrieving attachment **30** remained unknown until it was first unexpectedly discovered by Appellant. This clearly supports patentability of the claimed invention since "Obviousness cannot be predicated upon what is unknown", In re *Spormann et al* 150 USPO 449. What is unknown cannot be deemed to be part of the prior art. The prior art of record overwhelmingly establishes the ineffectiveness of the hook component (genus) itself in any tangential retrieval system as clearly acknowledged by *Feldi*, *Urwin* and later verified by the detailed account of the prior art by *Lamson*^H. The combination of the tennis ball retrieving attachment **30** as prescribed by Appellant's claim 9, defines a most highly specific and atypical pre-shrunk nylon monofilament characterized as having at least 300 hooks per square inch, an average hook height greater than 1.90 mm, an average hook width ranging from about 1.1 mm to about 1.3 mm, and an average hook depth ranging from .65 mm to about 0.75 mm and an average diameter of at least 8.25 mm (a species). These unique claimed characterizations relate to a tennis ball retrieving attachment **30** equipped with a most unusual and uncommon pre-shrunk nylon monofilament hooked material **31** uniquely (one-of-a-kind) distinguishable from all other known tennis ball attachments (generic or otherwise). The unexpected superior ball retrieving attributes as prescribed by appellant's claims were not known and remained unsuggested until discovered by Appellant. These findings and teachings belong solely to Appellant and not the prior art.

^H Exhibit H

Amongst the vast array of different paired hook and loop fastener systems (a genus of thousands)^B, manufactured and distributed by numerous different manufacturers (hundreds)^C under a wide variety of different brand names, all other hooked materials (as known to the Appellant), failed to provide the uniquely different and patentably distinguishable claimed attributes or, more remotely, achieve the unexpected efficacy of the Appellant's claims 1, 4, and 6-15, including claim 9 herein. These uniquely different and distinguishable claimed attributes (in the absence of the Appellant's own teachings) remain totally untaught and un contemplated by the cited art, which in conjunction with the unexpected results achieved by the Appellant's claimed invention clearly substantiates that the Appellant's claimed invention, as a whole, remains unsuggested and patentable over by the prior art on record. There does not exist any prior teachings of record which teach the need for a special hook in any tennis ball retrieving attachment much less appellant's. These facts directly refute the existence of any *prima facie* case of obviousness.

The final rejection necessarily presupposes that these highly unique and unusual findings known only to Appellant, were obviously known to the ordinary artisan notwithstanding that the prior art patents separately and collectively teach precisely the opposite. An essential element of both 35 USC 103 rejections is the need to rely upon appellant's contribution which clearly contravenes the obviousness standard. In re Dance, 160 F.3d 1339, 48 USPQ2d 1635 (Fed. Cir. 1998):

“Obviousness can not be established by hindsight combination to produce the claimed invention... (I)t is the prior art itself, and not the applicant's achievement, that must establish the obviousness of the combination.”

It is rather astounding that the *Feldi* patent is deemed to motivate an artisan towards Appellant's claims when in fact *Feldi* clearly teaches that “a hooked VELCRO material when affixed to the

^B Exhibit B

^C Exhibit C

end of a tennis ball racquet does not effectively pick up a standard tennis ball.” *Feldi* further teaches that the pile of a tennis ball is incompatible with the conventional hook components of the hook and loop fastening system. *Feldi* teaches accomplish tangential retrieval you must change the attachment and ball nap to a paired hook and loop fastening system. The *Feldi* teachings directly contradict the underlying rationale of the final rejections (i.e. use a hook material alone) and what the Appellant has discovered. Reference to the *Ross* patent teachings indicates that an early “VELCRO” product was marketed under the trademark MID-TEMP VELCRO which as stated by *Ross* constitute “the hooks are of stainless steel wire”. As clearly taught by *Feldi*, the *Ross* stainless steel hooks were not only incompatible and difficult to engage and retain a tennis ball nap (i.e. external wool nap covering) but that the stainless steel hooks once entangled in the nap would not release the entangled wool nap without destroying the cover. Appellant “may rely upon the fact that the prior art teaches the artisan not to do what the Appellant did and achieved unexpected results. This is the antithesis of obviousness.” In re Spormann et al 150 USPO 499 (CCPA).

Contrary to the Examiner’s assertion, the *Feldi* teachings (as a whole) suggest only using both the mating hook and mating loop components of the paired fastening system to engage onto one another. *Feldi* neither discloses nor contemplates the hook component alone or even more remotely the highly unique ball retrieving attachment characteristics as taught and claimed only by the Appellant herein. Thus, the *Feldi* patent clearly teaches that conventional hooked components (including the no longer available MID-TEM VELCRO stainless steel hooks) will not work and will not tangentially engage the pile of a tennis ball with sufficient tenacity so as to enable the hooked component to tangentially lift the tennis ball from the ground while also allowing detachment from the hooks without destroying the wool nap of a tennis ball. When a patent clearly teaches what is alleged to be obvious in a 35USC103(a) rejection (e.g. use of a hooked material alone) is not functional or workable, how then can it be presumed under 35USC103 that the artisan of ordinary skill would seek a solution in an area in which the *Feldi* patentee teaches would amount to a mere exercise in futility? How can *Feldi* be regarded to

suggest or motivate an artisan towards Appellant's claimed invention or that the *Feldi* teachings (as a whole) when combined with other patent teachings can be regarded to suggest and motivate the artisan towards the sole use of a hooked component (of a genus) of the required hook and loop fastening system of a vast genus, much less a hooked component (a species) of a very unique character which yields the unexpected results of appellants claimed invention? Since *Feldi* teaches that the hooked component is incompatible with a tennis ball cover and that it will not effectively engage or lift the tennis ball and if engaged cannot be effectively disengaged without destroying the nap cover after a few times of use, why would it be obvious for an ordinary artisan to seek a solution to a problem which totally contradicts these explicit teachings of *Feldi*? *Feldi* directs and motivates the artisan to a solution (e.g. see *Feldi* Col. 1, lines 28 - Col. 2, line 2) which is totally contradictory and directionally opposite from the claimed embodiments of the Appellant's invention herein.

As stated in the *Feldi* Abstract, the "ball gripper is a concept or idea using the two components of the VELCRO or any brand hook and loop fastening system." This constitutes no more than a genus teachings without any concern whatsoever to the hook character or the particular hook and loop system. The *Feldi* patent has no relevance to a hook component by itself, much less the most atypical hook component as prescribed by Appellant's claims 1, 4, and 6-15. References or patents when combined as a reference combination under 35USC103 may not be used in such a manner which totally negates what a patent or reference fairly teaches or suggests to the ordinary artisan as being essential or necessary.

Since the hooked components do not effectively engage or lift tennis balls and after few retrievals will destroy the usefulness of the tennis ball covering, *Feldi*'s inventive solution was to completely change the cover of the tennis ball (contrary to Appellant's invention) to either that hook or loop of the fastening system of any hook and loop fastener and then use the other mating of the component hook and loop combination so that the two-component fastener system (as consistently taught by the prior art) of changed ball and ball retriever would then effectively engage tangentially onto one another as intended. Since a tennis ball by standard of definition

requires a wool pile or wool nap (see Exhibit F) the proposal of *Feldi* would no longer meet the art of recognized definition of a tennis ball (See Exhibit E) or the claimed embodiments of the appealed claims. The flexible, pliable, and woolly fluffy character of the standard tennis ball would be completely altered to a relative rigid (e.g. nylon per Appellant's claim; or polyethylene and polypropylene of *Melbye et al*) inflexible looped or hooked material tennis ball covering which would no longer function in its intended manner, resulting in a substantial deviation in the performance of the tennis ball play. Since *Feldi* relies upon mating hook and loop system, the unique interaction of the hook component with the woolly pile is of no concern to *Feldi*. The ball's flight in air, air drag resistance, velocity, bounce, impacting character, rotational and spin features etc, are exemplary of these changes which would arise by replacing the conventional and standardized wool nap of all tennis balls with either the hook or loop or the *Feldi* hook and loop system.

As shown by the art of record (Wilson Exhibit E and Exhibit F) which as further taught by *Feldi*, a tennis ball is incapable of effective disengagement from a VELCRO MID-TEMP stainless steel hook without causing extensive damage to the ball covering "after just a few retrievals" (*Feldi*, Col 1, Lines 15-24), would be totally unfit for retrieving a tennis ball which by standard of definition requires a wool nap. The mating looped or hooked nap of *Feldi*'s proposed ball by *Feldi* would create a rigid loop or hook and not a flexible wool and therefore it is clearly not a tennis ball as required by appellant's claims. Thus the modified *Feldi* ball is *ipso facto* excluded by Appellant's claims. Inherency cannot be presumed under 35USC103(a), but must be factually proven.²

It should also be self-evident that the *Feldi* teachings would lead and motivate the ordinary artisan away from the unique and unexpected discovery of the Appellant's invention. The nature and character of the hook and loop fastening system is also of no concern to *Feldi*. It should also be abundantly clear that the generic *Feldi* teachings neither remotely teaches nor suggests the claimed embodiments of appellant's unique invention. Appellant has great difficulty in understanding the relevancy or how *Feldi* applies to the appellant's invention under

the provisions of 35USC103(a). How can a primary reference (*Feldi*) be relied upon in a 35USC103(a) reference combination when in fact it teaches the futility of the unexpected discovery of the uniquely different claimed features of Appellant's claims? How can a primary reference (*Feldi*) which teaches the artisan away from an appellant's claimed invention be regarded as providing those enabling suggestive and motivational teachings to direct an artisan towards an unknown invention when the essence of what is relied upon in the combined patent teachings under 35USC103(a) completely contradicts the essence of *Feldi*'s teachings?. The Appellant has discovered an invention which *Feldi* teaches as impossible, and even more surprisingly, under circumstances which yielded completely unexpected results. Under these circumstances, as aptly pointed out by Judge Rich in the decision of *In re Vaack* No 91-1120 (Fed. Cir. 1991):

“Rejection of claimed subject matter as obvious under 35 USC 103 in view of combination of prior art references requires consideration of whether prior art would have suggested to those of ordinary skill in art that they should make claimed composition or device, or carry out claimed process, and whether prior art would also have revealed that such person would have reasonable expectation of success; both suggestion and reasonable expectation of success must be founded in prior art, not in applicant's disclosure.”

Feldi neither provides the motivation nor any reasonable expectation of success. Newly cited *Smerdon* neither recognizes any hook and loop use other than a combination fastener use nor need to modify *Feldi* and bears no meaningful relevance to either the claimed combination or the claimed method.

It is of equally troubling concern under 35USC103(a) that when the *Feldi* patent is combined with another patent or reference of record, those basic and novel features critical to an appreciation of *Feldi* patent teachings, as a whole, are summarily disregarded in the combined teachings (i.e. not considered a part of the combined teachings) with an end result yielding a hypothetical reference combination (combined teachings) which completely negates and destroys the essence of the *Feldi* teachings.¹ As pointed out in the cited *Melbye* patent, the ability of a hooked member to engage and disengage a loop material is complex. This is why the art

consistently refers to a hook and loop fastener combination (a genus) in which both components are especially designed under highly specialized manufacture to be engaged and disengaged from one another. A common feature of all hook and loop fastening systems is that the fasteners are typically tailor made for paired use simply as a mating of a two-component fastening system designed especially to cooperatively interlock and fasten together, as illustrated by Applicant's Figure 3. The paired hook and loop fastener systems are sold as a paired combination and as such are neither designed nor intended for separate or unpaired use. The paired hook and loop fasteners are often provided as flexible strips with adhesive backings as shown in Figure 3 which allow the mating hook and loop combination to be placed upon a suitable substrate in an interfacing relationship. Appellant must ask why do all of the patents (including *Feldi*, *Urwin*, U.S. Patent Number 6,652, 397 B1 to Lamson with reference to Col. 1, lines 34-Col 3, line 14, which actually suggests using the adhesive backing of a hook and loop combination to engage the tennis ball) teach the ineffectiveness of all the prior attempts to tangentially engage and retrieve a tennis ball with all VECLRO type hook components (including SCOTCHMATE brands and all other hook and loop fastener brands) and all unanimously propose an alternative solution?

What basis upon reference to an ineffective MID TEMP VELCRO stainless steel hook does there exist to extrapolate equivalency of all other fastener hooks of a large genus including the metal, mushroom type, all non-metal types such as and including polyesters such as poly(ethylene terephthalate), polyamides such as nylon, poly(styrene-acrylonitrile), poly(acrylonitrile-butadiene-styrene), polyolefins such as polypropylene, and plasticized polyvinyl chloride (e.g. see *Melbye*, Col 5, lines 1-8) coupled with the manufacturing variables such as size, cooling and drawing, height, width, depth, etc. to the claimed "series of pre-shrunk nylon monofilament hooks" of a very precise and narrowly defined hook width, hook depth, hook diameter and hook height as claimed by appellant and especially when viewed within the context of clear prior teachings explicated stating what appellant has done cannot be done?

Feldi teaches as an essential embodiment of his invention that the cover of the tennis ball

must necessarily be completely changed to one of the mating looped component or the mating hook component of the two-component VELCRO fastening system so that the hook and loop fastening systems is fulfilled. There exists no concern about the hook component except the genus function to fasten onto is loop mate. *Feldi* clearly teaches replacing the tennis ball wool nap with the mating looped or hooked material with the other mating component on the tennis racquet which allows the mating “hook and loop fastening system” to work conjointly in their intended manner. Yet the *Feldi* patent as applied and relied upon in both of the 35USC103(a) rejections proposes a combined patent teachings (as applied) which disregards those essential embodiments of the *Feldi* teaching, as a whole, including those matters taught by *Feldi*, are absolutely necessary to its operability. “The issue of obviousness is not determined by what the references expressly state, but by what they would reasonably suggest to one of ordinary skill:”, *Ex Parte Berins* 168 USPO 374. Contrary to the Examiner’s assertion, *Feldi* does not teach using a hooked material alone but rather only as a conjoint use of both the mating hooked and looped fastening system. The manner in which *Feldi* has been applied in the 35 USC 103(a) rejection totally negates what the *Feldi* patent fairly teaches and suggest to the ordinary artisan. What the Examiner is suggesting is to forget about the changing nap of the tennis ball, forget the hook and loop attachment and tennis ball cover fastening system as taught by *Feldi* (i.e. the teachings as a whole) and then use only a hooked material which completely contradicts the *Feldi* teachings. Clearly this is not what *Feldi* teaches or motivates the ordinary artisan to do. There exists no basis in the prior art teachings to direct or motivate the skilled artisan to the claimed highly specific pre-shrunk nylon monofilament hook possessing a uniquely superior efficacy. The attempt to rely upon *Feldi* (as well *Urwin*, *Smerdon* and *Melbye et al*) cannot be reconciled with M.P.E.P. 2144.05 III which mandates that “a prima facie case of obviousness may be rebutted by a showing that the art in any material respect, teaches away from the claimed invention”. In re Geisler, 116 F3d 1465 43 USPQ 1362 (Fed.Cir. 1997). The application of *Feldi*, *Urwin* and *Smerdon* as a reference combination deviates in a material aspect in that there exists no concern of hook size and the essence of these patent teachings and explicitly teach away

from appellant's invention. Appellant did precisely the opposite of what *Feldi* suggests to the artisan. Appellant's invention relies upon an unknown tennis ball retrieving attachment **30** (heretofore unknown to the artisan and the inventor) equipped with an unique and distinctly different relationship hooked material which surprisingly via a unique inter-cooperative relationship with the standard tennis ball wool nap provides unexpectedly superior results heretofore totally un contemplated and unknown to the artisan as evidenced by the *Feldi* teachings. The claimed attachment not only tangentially engage tennis balls with unexpected tenacity but also permits a disengagement without destroying the tennis ball nap.

French Musslin Patent Teachings (All Claims - Both Rejections- All Issues)

The French *Musslin* Patent is also relied upon as an alternative primary reference in the 35 USC 103(a) of Claims 1, 4, 6, 7, 9,10 and 12 in paragraph 2 of the final rejection, as well as in the 35 USC 103(a) final rejection of claims 8, 11 and 13-15 of paragraph 3. The French *Musslin* patent teachings may neither be read in a vacuum nor be properly appraised under Section 103(a) without first being viewed in light of what the art, as a whole, deems to be the state of the art. Accordingly, the prior art teachings include the cited *Feldi* and *Urwin* patents, as well as prior art teachings of U.S. Patents Nos. 3,874,666 to *Ross*, 4,210,327 to *Schubert*, and 4,114,881 to *Norton* (e.g. see Appellant's Background of the Invention) disclosure of page 1, line 18-page 3, line 21. Under 35USC103(a), what the prior art actually and factually teaches and suggests to the ordinary artisan should never be replaced with factually unsupported and hypothetical considerations based upon isolated and incomplete conclusions or half truths which as applied contradict the combined patent teachings and represents false assumptions. Typical of many foreign patents, the French *Musslin* patent teaches nothing in its brevity and embraces everything under the sun by its all inclusive "catching elements" or sticky elements terminology without even disclosing one useful catching element, while also failing to comply with the minimal 35 USC 112 disclosure and enabling requirements of the U.S. Patent law. The *French Musslin Patent* vaguely refers to a cloth-like wrapper with hooks, including catching elements or hooks ranging from natural, artificial, synthetic or metallic catching elements which adhesively stick or

hook onto the ball cloth envelope (e.g. see line 57 on page 1). These *Musslin* teachings embrace an immense group of endless catching elements (which may hook or adhesively stick) of a much greater magnitude than even the paired hook and loop fastening system of *Feldi*, so vast in all encompassing teachings and so indefinite that the artisan is in essence taught nothing by *Musslin*. Not even one single example or mentioning of a workable ball retrieving attachment equipped with a specific and workable catching element is disclosed by *Musslin*. An ordinary artisan would be mystified as to what was meant by these vague and indefinite teachings of *Musslin*, much less the required enabling teachings of what is to be precisely used and how it is to be used. *Musslin* represents, at best, an experiment to try or test from an unlimited class of endless catching element materials (e.g. see Exhibits B & C). The specific nature and character of the hook as it relates to a tennis ball wool pile cover is of no concern to *Musslin*. The entire genus works according to *Musslin*. Accordingly, *Musslin* neither discloses nor suggests the unique claimed tennis ball retrieving attachment of Appellant's claims 1, 4, and 6-15, (known only to Appellant) much less the unexpected results. Any artisan seeking scientific solutions would certainly seek more concrete answers by looking to more meaningful prior art teachings such as *Feldi*, *Urwin*, *Schubert*, etc. *Musslin* provides no motivation or suggestive teachings towards Appellant's device or its unexpected use. The prima facie case of obviousness requirement of M.P.E.P. 2143.03 that all of the claimed limitations¹¹ must be taught or suggested by the prior art is not met by the infinite *Musslin* teachings any more than any of the cited references of record.

The appellant also wishes to refer the Board of Appeals attention to U.S. Patent No. 6, 652, 397 B1, to Lamson (see Exhibit H). Although the *Lamson* patent bears a subsequent filing date (May 17, 2002), the *Lamson* patent provides verifying evidence that the 35USC103(a) final rejections of record rest upon compounded speculative conclusions which at best contradict what was consistently known and taught by the prior art up to and after the date the appellant filed her parent application. The prior art knowledge as it relates to the use of VELCRO type hooks in any of the cited patents including *Lamson* does not deviate from appellant's position on this appeal and particularly the unrefutable fact that the hook materials (used in a broad sense) were

notoriously recognized as ineffective for tangentially engaging and releasing the nap fibers of a tennis ball which is succinctly summarized in the Lamson Background of the Invention, as well as by *Urwin*, *Feldi* and appellant's specifications. The genus does not work and the species is unknown.

Musslin broadly refers to any effective material adhesively sticking onto the ball clothe envelop by which could conceivably mean using an adhesive material to stick to the tennis ball. One cannot draw any conclusions as to what Musslin may have had in mind since the *Musslin* teachings are so broad and indefinite (and discredited by the more subsequent learned art findings) that as the prior art has subsequently concluded (without dissent) that *Musslin* taught nothing. In order to illustrate how far fetched the *Musslin* patents may be imaginatively stretched, the use of the hook and loop fastener combination could embrace either the hook or the loop adhesively secured to racquet and then the hook and loop fastener are fastened together in a face to face relationship leaving the outwardly exposed pressure sensitive adhesive backing of the exposed hook or loop fastener backside to serve as a sticky adhesive to engage and retrieve a tennis ball as taught by *Lamson*. What other than unfounded speculation and abstract conclusions would remotely suggest a highly specific and unique ball attachment, when the very art relied upon by the Examiner (as a whole) teaches it cannot be done and the futility and ineffectiveness of such a proven unsuccessful endeavor (i.e. VELCRO and all other hook materials).

Melbye et al (all issues)

There clearly exists a glaring paucity of a meritorious 35 USC 103(a) factual teaching which possibly, in combination with either *Feldi* or the French *Musslin* Patent would fairly teach and suggest all of the claimed embodiments of Appellant's invention. The *Melbye et al* patent has been combined with either *Feldi* or French *Musslin* patent teachings in both of the 35 USC 103(a) rejections for allegedly teaching the equivalency of all hook components sold under the VELCRO or SCOTCHMATE Brands. Unfortunately, the Examiner makes the same error and oversight when relying upon the *Melbye, et al* teaching, as occurred with the *Feldi* analysis. The

Examiner considers the *Melbye et al* **paired** hook and loop fastener teachings of Col 1, lines 15-23, as ipso facto applying to the hook components alone, without recognizing that the “garment fasteners” as taught by *Melbye et al* are the same **paired** “hooks and loop fasteners” as taught by *Feldi*. Only the **paired** “hook and loop fastening system” serve as garment fasteners is taught by the combined *Feldi* and *Melbye, et al* and *Smerdon* teachings. The term “hook” of the hook and loop garment fasteners of *Melbye* means as intended a hook for hooking the mating loop of the garment fastener hook and loop combination. These patent teachings (including *Melbye*) are irrelevant to the separate and unpaired use of the either the hooked or looped component by itself. To isolate the hook component and declare equivalency between all hooks including all VELCRO and SCOTCHMATE hooks involves pure speculation.

As recognized by the Board of Appeals, the *Melbye* patent does not disclose appellant’s unique species amongst its genus teachings. The Examiner’s reliance upon the *Melbye, et al* Patent is also most mystifying for allegedly “showing that VELCRO and SCOTCHMATE are functional equivalents as hook-and loop fasteners” in an attempt to bridge the gap of the unknown. The appellant is not claiming in claims 1, 4, and 6-15 a two component “hook and loop fastener system” or “garment fastener” system as taught by either *Feldi* or *Melbye et al*. The Examiner’s reliance upon the *Melbye et al* Column 1, line 15-18 background teachings of “Widely used as garment fasteners are hook-and-loop fasteners such as currently marketed under the trademark VELCRO by Velcro U.S.A. Inc and under the trademark SCOTCHMATE by 3M Company” as a basis for establishing equivalency for all SCOTCHMATE and VELCRO products or more remotely in establishing equivalency for all hooked components from all hook and loop fastening system sources is thus clearly in error. The same error that existed in the parent application appeal.

The equivalency rationale of the final rejection also fails to take into account a very important fact that the appellant is not claiming VELCRO or SCOTCHMATE generic garment fasteners (hook strip component and a mating nylon loop pile strip component) as “widely used in garment fasteners” as taught by *Melbye et al*. It is only when both the hooked strip and looped

strips are used together (not separately) is there any meaningful interpretation of the generic *Melbye et al* “garment fasteners” teachings. *Melbye et al* do not contemplate the loop material or strip by itself as a garment fastener. Similarly *Melbye et al* do not contemplate the hooked material by itself as a garment fastener, but only when the two mating hooked component and mating looped component system is combined in their intended manner and use will the two-component system serve as garment fastener as taught by *Melbye et al* as well as *Feldi* and *Smerdon*. Even more remotely, *Melbye et al* do not remotely suggest or contemplate anything about a tennis ball retrieving attachment. All that may be concluded from *Melbye et al* is that the significance of the hook component rests solely upon its intended relationship to its paired and mating loop component as a generic garment fastener and no more.

It is accordingly equally plausible to construe the *Feldi*, *Musslin*, *Urwin*, and *Smerdon* as teaching the *Lamson* hook and loop fastener combination with the adhesive backing serving as the adhesively sticky material for engaging and retrieving applying exactly the same rationale as has been applied in the current final rejection.

Smerdon

Smerdon discloses a bicycle mounted liquid storage and delivery system having a hook and loop fasteners in which the “loop fastener material 9 is adhered around the circumference of the end of the beverage tube ... preferably to overlap the ends of the loop section slightly, so that the adhesive bonds to the loop material, as well as, to the surface of the beverage tube” and the “hook fastener ... is adhered to the handlebar stem” (e.g. see *Smerdon* Col 11, lines 66-Col 12, line 13). Since the loop fastener is attached to outlet or drinking end of the watering tube, *Smerdon* teaches in Col 12, lines 5-17 that the overlapped ends of loop material backing “adhesive bonds” to the loop portion and since the watering or drinking tube outlet end may often be wet, an adhesive backing that will “maintain good adhesion in wet and warm conditions” such as the 3M SCOTCHMATE SJ3526 and SJ3527 industrial fastener may be illustratively used for this purpose. Please note that the loop material is adhesively wrapped and adhered onto the “wet” drinking or watering tube outlet, meaning outwardly projecting loops bonded to the

adhesive backing of the SCHOTCHMATE SJ3526 or SJ3527 industrial loop fastener material and onto the “wet” outlet tube end. The nature of the hook component (as in all other cited patents) is of no concern other than its genus hook and loop fastening function.

In the application of *Smerdon*, it is interesting to note that *Smerdon* is being interrupted by selectively gleaned words and partial phrases from *Smerdon* (using appellant’s invention as a template) which may have some bearing to appellant’s claims while neglecting other disclosures meaningful to the overall teaching of *Smerdon*. *Smerdon* allegedly teaches that the SCOTCHMATE SJ 3526 and SJ3527 (disclosed as having pressure sensitive backings exhibiting good wet and warm adhesion) which in turn the Examiner speculatively interprets as rendering it useful for racquet attachment to render the VELCRO type hook fastener useful. The Office Action further concludes that *Smerdon* teaches the use of both the generic hook and loop fastener as *Feldi* and *Urwin*, that the U.S. Open or Wimbledon matches are conducted in wet conditions (e.g. rain), *Melbye* allegedly teaches the equivalency of VELCRO and SCOTCHMATE and therefore the collectively implied speculative conclusions (as applied in the final rejection) would render it obvious to use the *Smerdon* adhesive backing hook and loop upon a tennis racquet as taught by either *Feldi* or *Musslin* or *Urwin*. There also exist enumerable other hypotheticals or fortuitous leaps to gap that which is unknown as evident by the *Lamson* solution which reveals that the final rejection relies upon a plurality of unfounded speculative conclusions to reach any obvious conclusions which can be fortuitously drawn from the same reference in any reference combination. The fact remains, however, that the prior art neither teaches nor suggests what hypothetical or postulated conclusions may be legally drawn from each reference and the manner in which such hypothetical and unfounded conclusions are to be combined in a manner to reach an ultimate conclusion completely contrary to what the references individually and collectively teach to the ordinary artisan. The exercise of hindsight is self-evident.

The manner in which the French *Musslin* Patent has been relied upon as a primary 35USC103 reference in the final rejection of appellant’s claims 1, 4, 6, 7 and 9-12 as combined with either *Melbye et al*, *Smerdon* and Appellant’s admission of the prior art in her specifications

is most puzzling. The Examiner apparently refers to *Feldi*'s paired two-component hook and loop fastening system as grounds for establishing equivalency and then refers to "garment fasteners" (i.e. hook and loop fasteners) as currently marketed under VELCRO and SCOTCHMATE brands referred by *Melbye et al* as garment fasteners as establishing a basis for equating the equivalency between all hook and loop fastener or a genus as well as all hooked materials (as a genus) and then without any other factual basis to arbitrarily conclude that all VELCRO and SCOTCHMATE brand hooked materials are equivalent to one another (i.e. unrecognized species) which is factually false and legally impressive under any 35USC103(a) standards of admissible evidence. This alleged position is taken notwithstanding clear and unrefuted facts that the both *Feldi*, *Melbye et al*, and *Smerdon* apply only two-component paired hook and loop fastening system as a fastener combination and as a paired genus system. Nothing in any of the cited patents would permit a series of a three step assumed equivalency involving a summarily disregard of an essential component (i.e. looped material) from the garment fastener function. Appellant's previous remarks above also apply with equal merit to the 35 USC 103 combination of the French *Musslin* Patent, *Smerdon*, and the *Melbye et al*.

The entire basis for presupposing clearly unsuggested and untaught facts from the cited patents of record arises via the erroneous application of the doctrine equivalence relying upon matters clearly taught not to be equivalent (paired genus hook and loop fastening systems does not establish equivalency between all hooked materials for unlimited use with every conceivable fibrous or wired material) or rewriting and interpreting the cited patents to have a meaning different from what is taught. The term "hook and loop fastener" such as referred to as "garment fasteners" are generic teachings necessarily include the loop for which the hook is specially designed to engage and disengage in the fastener combination. As taught in each of the enabling patents, the mating loop of a precise physical and compositional make-up is specially designed for paired hooking onto the specially designed and paired looping component and no more. The erroneous equivalency determination of the hook at the exclusion of the loop relies upon only half of the story. The equivalency theory (as applied) must necessarily conclude that the loop

component of both the *Melbye* garment fasteners and *Feldi* hook and loop fastening system are immaterial components which can be eliminated as useless or inconsequential considerations. This should be self-evident by the fact that what has been presumed to be equivalent does not function in the same manner nor does it produce the same result. There exists no factual basis for drawing such unfounded and erroneous conclusions as elucidated in *Ex Parte Novel* (PO Bd App - 158 USPQ 237), “the Examiner must provide proof to back upon his speculative assertions.” The Office Action fails to take into account the existence of hundreds of different patents (e.g. see *Melbye*) relating to the manufacture and use of a host of different types of fastener systems, including those of a pedestal and mushroom type as well as those of a hook and loop fastening type (e.g. see Exhibits B & C). A host of different paired garment fasteners and paired hook and loop fastening systems are manufactured and distributed by scores of different manufacturing and distributing sources. Patents are consistently issued upon numerous patentable versions of such paired hook and loop fastener systems, their method of manufacture and their countless uses. Loops and hooks of the paired combination are consistently changed so as to better engage and fasten together. In addition, there exists a wide array of different manufacturers who produce different fastener system combinations under a host of different labels. A vast array of compositional (molecular and chemical composition), structural and functional properties arise by altering the host of different manufacturing conditions of their manufacture (e.g. as clearly shown by cited *Melbye et al* patent). The ultimate end product for hook and loop fasteners as referred to in *Feldi* and *Smerdon* are manufactured and sold for their intended end use as a paired “hook and loop fastening system.” The vastness of the hook and loop fastener field should be self-evident by the fact there exists no teaching or suggestion of record directing or motivating the artisan towards a unique and unknown claimed ball retrieving attachment 30 of a highly specialized characteristic and which accomplishes an astonishing feat (tangentially contacting and lifting all major tennis ball brands) while all others (i.e. 35USC103 patents of record) said such a feat could not be achieved. There exists a multitude of adhesively backed hook and loop fasteners. What other than hindsight reconstruction would lead the

skilled artisan to fortuitously isolate the hook component of *Smerdon* and use it for an unfit purpose as taught by the art. Notwithstanding the final rejections unsupported conclusions that the artisan would readily recognize the obvious merit of the one-of-a-kind nylon monofilament hook attachment as claimed (amongst a vast number of other alternatives), when all of the other meritorious, learned and comprehensive patent teachings (including subsequently filed *Lamson*) clearly teach the futility of using any type of Velcro or other hook material (including SCOTCHMATE brands) for use to effectively tangentially retrieve grounded tennis balls.

The Examiner is clearly in error by over simplifying the immense scope of the paired hook and loop fastening system and the paired garment fastening field and considering as a genus to ipso facto include inherently the claimed species. Even if we were to separate the hook component from its required loop mate, the field of technology still remains immense. A U.S. Patent and Trademark patent data base search of the “hook and loop fastener” reveals 5215 hits covering a host of garment fasteners and a host of patents direct towards various different processor and a host of product variations to produce a host of different end products. This is exemplified by *Melbye* and U.S. Patent No. 4,910,062 which discloses “the art is replete with sheet materials that can be cut into smaller pieces to form portion of fasteners, and methods for making sheet materials.”

Is it not clearly patentable under 35USC103 to discover (amongst a vast genus teaching where hook character is of no concern) an unknown ball retrieving attachment (species) of an unknown ball retrieving function to produce an unknown and unexpected result which is acknowledged by the art of record as most astounding in view of clear 35USC103 patent teaching stating it cannot be done? The prior art solutions are diametrically opposed (e.g. change ball cover to the hook and loop fastening system, use a stiff stainless steel hook which cannot be disengaged from a tennis ball without tearing or removing the nap wool cover (e.g. as taught by *Feldi*, *Ross* and *Lamson*, etc., or the *Urwin* cupped grasping retrieving attachment, etc.) to Appellant’s unexpected discovery and results. The prior art has taught the futility of Appellant’s solution to a long felt need, all of which provide further objective evidence of the patentability of

the claimed method claims 10-15 herein. Obviousness cannot be predicated upon what was heretofore unknown. The prior art rebuts any prima facie of obviousness by materially teaching away from the claimed invention (M.P.E.P 2100-107).

Several noteworthy legal decisions are deemed to have a direct bearing upon the relevancy of the *Musslin* teachings in the reference combinations as relied upon in the 35USC103(a) rejections of record. Attention is directed towards *In re Faye and Fox* 147 USPQ 47 (CCPA) which noted that:

“The best one skilled in the art might glean from the prior art is that any conclusion about the operativeness of halogenated ethanes not disclosed therein would be based on pure speculation, and would be the subject of experimental testing. Many of these tests are of necessity ‘routine’ tests, yet they must be so guided and directed as to eliminate the areas of speculation. Our conclusion in *In re Sprock*, 49 CCPA 1039, 301 F.2d 686, 133 USPQ 360, 364, seems particularly appropriate.” “It seems to us, therefore, that substantial differences exist between the teachings of the prior art and the invention here claimed. The fact that appellants have found a limited class of materials among the necessarily large number of prior art materials is itself a factor to consider as evidence of unobviousness of the claimed invention. See *In re Ruschig*, 343 F.2d 965, 145 USPQ 274.”

Similarly in *Ex Parte Horst* - 844 O.G. 1168, The Board of Appeals held that:

“The most we can say from the reference as the Examiner presents it, is that the worker of ordinary skill in the art would see some similarity between the action of the divalent forms of europium and manganese as activators. The Examiner, in effect, asks us to conclude that such worker would carry this similarity to the point of the obviousness demanded by the stature, as to each and every host material listed by the reference. This we cannot do, anymore than we can conclude from this type of evidence that the prior art recognizes that any known activator will activate any known host material...”

The combination references as applied in the two 35USC103(a) rejections of record against Appellant’s claims 1, 4, and 6-15 are closely related to the factual circumstances of *Ex Parte Marinaccio* 10 USPQ 2d. 1716 Board of Appeals (1989) which reversed the Examiner for failing to adequately explain why the skilled routineer in this art would have been motivated to use a particular filter medium specifically noted by one of the cited 103 references as being unacceptable by reason of its proneness to clogging. *Marinaccio* noted that no reference or combination of references appeared to teach or suggest a specific claimed modified organic

polymeric skinless microporous hollow fiber filter membrane as required by the appealed claims.

The Board of Appeals observed that:

“While we have no doubt that the skilled rountineer in this art could modify the prior art relied upon by the examiner and obtain the appealed process, the question of obviousness under 35 USC 103 is not what a routineer could have done, but what it would have “been obvious” for such a person to do. *Ortho Kinetics Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1 USPQ 2d 1081 (Fed. Circ. 1986). The examiner has presented no supporting explanation or evidence why it would have been obvious to use the particular membrances of the appealed claims in appellants’ particular type of filtration process. The decision of the examiner is reversed.”

The examiner herein has presented no supporting evidence (except for highly speculative and technically inaccurate assertions) as to why it would have been obvious to use the particular type of claimed tennis ball retrieving attachment for its limited use of the appealed method claims 10-15 and the tennis racquet ball retrieving combination of claims 1, 4, 6-7 and 9.

With particular reference to the vague and indefinite teachings of the cited *Musslin* patent, the Board of Appeals attention is also directed to In re Collins 174 USPQ 333 wherein Judge Rich concluded that:

“Reference which merely describes a thing or a process without telling how to make it or carry it out does not support holding of anticipation unless a skilled artisan could take its teachings in combination with his own knowledge of the particular art and be in possession of the invention; such a reference does not support holding of obviousness unless there is some known or obvious way to make the thing or to carry out the process.”

As to the relevancy of *Musslin* non-enabling and unlimited teachings under 35USC103(a) reliance is also placed upon well established legal precedence expressed by the following legal doctrine:

“It seems to us, therefore, that substantial differences exist between the teachings of the prior art and the invention here claimed. The fact that appellants have found a limited class of materials among the necessarily large number of prior art materials is itself a factor to consider as evidence of unobviousness of the claimed invention. See *In re Ruschig*, CCPA, 343 F.2d 965, 145 USPQ 274.”

A patent such as *Musslin* which teaches a vast and indefinite class of materials without any more guidance falls within that lack of suggestion or motivation as elucidated in the Board of Appeals

decision of Ex Parte Kuhn 132 USPQ 368 wherein the Board held that:

“The examiner’s meticulous application of the Fikenstscher et al reference appears to at least establish that appellant is working within the broad field encompassed by this patent. Indeed by selecting specific items and conditions it might be possible to end up with a product similar to appellant’s. However, in absence of some directions or reasons for making such selection a very long experimental program might be required in order to arrive at such product. The present invention is quite specific... we are convinced that the reference had no appreciation. ...It therefore appears that appellant has made an invention within the general disclosure of Fikentscher et al and should be entitled to patent protection for his highly specific and limited contribution in line with such decisions as, for example; Becket v. Coe 1938 C.D. 55, 495 O.G. 215, 98 F. 2d 332, 38 USPQ 26; Ex Parte Frey, 90 USPQ 39, Ex Parte Rawlins, 88 USPQ 329.”

Equivalency Assertions (All Claims and All Issues)

An assertion of equivalency in any 35USC103(a) rejection requires clear substantial evidence of actual and obvious equivalency between those materials alleged to be equivalent. A recognition of the existence of “garment fasteners” and “hook and loop fastening systems” bears no relevance to appellant’s claimed tennis ball retrieving attachment **31**. A mere relationship is insufficient evidence to establish the first leg of the obvious equivalency test.¹⁰ Similarly, a mere mentioning of VELCRO or SCOTCHMATE does not by itself establish equivalency. If *Musslin* is referring to the stainless steel VELCRO AIR TEMP of *Ross* as clearly taught by *Feldi* to be ineffective, equivalency certainly does not exist between appellant’s claimed unique nylon monofilament hook and the hook and loop combination of *Melbye* or *Feldi* or *Musslin* or *Urwin* or *Smerdon*. Applicant is not claiming a VELCRO stainless steel MID TEMP ball gripper of *Ross* which as reported by *Feldi* was ineffective and all later patents would not release its grip and therefore, after just a few retrievals ---- the ball covering becomes fuzzy and no longer useful in normal play. The reliance upon a mere relationship simply by a genus association to establish equivalency becomes even more tenuous by the fact that the alleged mere relationship has been stretched from the taught paired relationship of “hook and loop fastening system” of “garment fasteners” to the claimed untaught hook component (subspecies) by itself. This speculative assertion has been erroneously postulated notwithstanding a showing of record of clear and

distinctive differences in the compositional make-up, the physical characteristics, the nature and character of each mating loop and hook system and how each of the paired hook and loop combination are especially designed to fasten together, as well as the various different manners in which they are manufactured and how they each individually function or perform. This mere relationship thereby becomes further strained by the *Smerdon* wrapping of a water drinking tube outlet with a SCOTCHMATE SJ3526 or SJ3527 loop component and placing the mating hook component upon a bicycle handlebar stem so as to allow securance of the drinking outlet to the bicycle stem. The Office Action relies upon the *Smerdon* SCOTCHMATE SJ3526 and SJ3527 adhesive backing of a hook and loop fastener for fastening a watering tube to a bicycle handlebar stem to theorize that the skilled artisan would ipso facto attach the hook element alone by reason of U.S. Open and Wimbledon matches are conducted under “wet” meaning rainy conditions. This mere relationship issue as taught by all of the art relied upon for the equivalency assertions by the Examiner extends no further than the paired two-component “fastening system” combination as taught by *Melbye*, *Smerdon* and *Feldi*. The patenting of the mushroom type fasteners of *Melbye et al* made under specially designed manufacturing conditions to provide a unique mushroom type fastener as patented by *Melbye et al* provides clear evidence of the vast array of hook and loop fastener differences which may be accomplished simply by altering the starting chemical material and the processing conditions under which the chemical end products (e.g. hook and loop fasteners) are manufactured. As previously mentioned, a vast amount of patent literature exists upon the manufacture of different types of hook and loop fastener systems, and an even greater body of art exists upon the divergent uses of these fastener systems. (e.g.. see Exhibits B & C)

The fact that the specially manufactured paired mating hooked component and looped component are specially designed to cooperatively interrelate, engage and fasten onto one another as taught by *Melbye*, and are not to be used or function independently is verified by *Feldi* as well as *Smerdon*. *Feldi* clearly states that the hooked component is ineffective for tangentially engaging a conventional tennis ball wool nap so as to allow the tennis ball to be repeatedly lifted.

It is not surprising (especially in view of the prior art teachings of record, as well as, the appellant's summary of the prior art teachings in the Background of the Invention teaching on page 1-4 of her specification confirmed by the subsequently filed *Lamson* patent) that *Feldi* found that only when the mating VELCRO loop and hook fastening system was used conjointly (as the system specifically intended by the manufacturers) would there then exist the essential mating combination for engaging and lifting a ball. The modified loop covered ball with the mating hooked component upon the tennis racquet, or vise versa, works only when used in combination as a paired "hook and loop fastening system" as clearly taught and suggested by *Feldi*, *Melbye* and *Smerdon*. It is therefore important to recognize that neither *Feldi* nor *Melbye et al* nor *Smerdon* suggest or teach the use only of a hooked component outside the fastening system but rather only the use of both the mating hook and mating loop components or fastening system together as a "garment fastener" or as the "ball grasper" or as hook and loop fastener combination for fastening a drinking tube outlet to a bicycle handlebar stem. Any extrapolation of either *Melbye et al*, or *Feldi* or *Smerdon* to teach or suggest solely the use of a hooked material without its paired mating companion contradicts what these patent actually teach to the artisan and rests purely upon speculative and unsubstantiated suspicions unsupported in law and fact. Upon the basis of the manner that the *Smerdon* patent has been applied in the final rejection, it may also be concluded that since *Feldi*, *Melbye* and *Smerdon* all teach the need to use both the hook and loop fastener combination. To further illustrate the conjecture involved by applying *Smerdon* in the final rejections, it may be concluded that *Smerdon* teaches SCOTCHMATE SJ3526 or SJ3527 loop fasteners having adhesive backing which may be arbitrarily assumed to be suitable for attachment to the tennis racquet shoulder and it may therefore conclude that it would have been obvious to attach the mating SJ 3526 or SJ3527 hook and loops together leaving the adhesive layer to provide the sticky adhesive as taught by both *Musslin* and *Lamson*. This purely speculative application of the same reference relying upon the same rationale relies solely upon hindsight reconstruction to provide the rationale for making the reference combination under 35USC103(a) and substantiates inherency cannot be presumed.

There exists a host of fabric fasteners produced by a host of divergent processes leading to a myriad of different fabric fastener systems, all of which are especially adapted to be used conjointly to provide the paired fastener system. It is within this vast mosaic of prior art teachings in the face of explicit patent teachings consistently concluding that what Appellant has accomplished cannot be done coupled with suggestive teachings involving diametrically opposed solutions, that Appellant discovered an amazing tennis ball retrieving attachment (an isolated species) which, when used upon a tennis racquet to retrieve a tennis ball, yielded truly astounding results. All of the later patents acknowledging the early work reported and patented by *Ross* (1975) conclude that all of the non-metal hooked materials (e.g. see *Feldi*, *Urwin*, *Lamson*, *Schubert*, etc.) are incapable of tangentially engaging and lifting a grounded tennis ball and that the *Ross* stainless steel hook did not effectively work in a number of ways (e.g. see *Feldi* and *Lamson*). Appellant's invention, as a whole, including the prior art teachings away from Appellant's invention and totally unexpected results represent an unobvious invention under any patentability standard.

The prior art teachings relied upon in the allegedly establishing the groundwork for equivalency in the final rejection precariously rest upon the *Melbye et al* at Column 1 lines 15-22 of the "widely used garment fasteners are hook-and-loop fasteners... currently market under the trademark VELCRO and SCOTCHMATE and the *Feldi* abstract teaching of "using the two components of the VELCRO or any brand hook and loop systems... using these two components in any form or manner to retrieve a tennis ball" and the *Smerdon* SJ3526 or Sj3527 adhesive backing for fastening a "wet" watering tube to a bicycle handlebar stem relying upon the hook and loop fastening combination. Relying exclusively upon these inapposite and innocuous teachings taken out of the context in which they are found, the Office Action again conveniently overlooks the fact that these isolated teachings only have relevancy to *Melbye et al*, *Smerdon* and *Feldi* when only both the paired hook and loop fastening system are used together. This is the paired system in which the paired hook and loop are intended to be used as "garment fasteners" as taught by both *Melbye et al* and *Feldi*. The manner in which *Smerdon* has been applied

against appellant's claims bears a similarity to *In Re Bausch & Lomb, Inc. v Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 230 USPQ 416 (Fed. Cir. 1986):

“A single line in a prior art reference should not be taken out of context and relied upon with the benefit of hindsight to show obviousness.”

Contrary to these very explicit paired hook and loop fastening system teachings of *Smerdon*, *Feldi* and *Melbye et al*, the Examiner in the final rejection has carefully dissected from the hook component (from the necessary and essential paired component hook and loop system), isolated the hook component as the actual and obvious equivalent to all hook and loop fasteners and applied the “wet” adhesive backing of the *Smerdon* loop to the *Feldi* or *Musslin* racquet to overcome the problems of wet or rained out U. S. Open or Wimbledon matches, solely based upon *Smerdon* teachings of adhesively attaching the SJ3526 or SJ3527 loop component to a watering tube outlet to permit its fastening to hook component attached to a bicycle handlebar stem, and presumptively jumped to the non-sequestur conclusion that these teachings establish an art recognized equivalency (apparently as the alleged nexus of the genus to the species) between the ever conceivable hook of every conceivable hook of all hook and loop fastener systems irrespective of their manufacture and inexpective of their diverse shape, characterization, composition and function. A myriad of different types of paired hook and loop fastener systems produced by a host of manufacturing conditions and compositional differences which are designed to yield different types of hook and loop fastener systems exist. To isolate any mating hook from its mating loop of the paired fastening system is analogous to having a marriage without the bride.

Melbye et al and Smerdon in the French Musslin or Feldi Combination (All claims and Issues)

The combination of *Melbye, et al* with either the French *Musslin* patent or *Feldi* rests upon erroneous interpretation of the *Melbye, et al* background of the invention teachings and a complete disregard to what *Melbye, et al* actually teaches about hook and loop fastener systems. *Melbye, et al* discloses a mushroom fastener which fastens together by wedging and interlocking the mushroom heads together as shown in the *Melbye et al Figure 2*. Any combination of *Feldi*

and *Melbye et al* under 35 USC 103(a) must necessarily rely upon the “garment fastener” or two component hook and loop fastening system combination of a mating hooked component and a mating looped material and no more. The hook component of the *Melbye* “garment fastener” is especially designed to hook onto its loop component and thus provide the notorious hook and loop fastener which *Melbye* refers to as “garment fasteners”. *Melbye et al* allegedly discloses a SCOTCHMATE product as a garment fastener but also teaches VELCRO as another illustrative hook and loop fastener (i.e. garment fasteners). There exists no concern of hook size or type (species) as it pertains to interlocking onto an alien non-loop component such as a tennis ball pile by *Melbye*. The *Melbye et al* teachings are primarily directed towards a specially designed and configured mushroom-type fastener system of two matching pedestalled mushroom headed fasteners (stems with a mushroom head) in which at least three units are required to interlock with one another or fasten together as shown in figure 2 of *Melbye, et al*. In direct contradiction to the Examiner’s position that equivalency may be inherently presumed upon the basis of a mere relationship, the mushroom type fasteners of *Melbye, et al* are taught as reportedly provide superior and patentable interlocking fastening properties when used as a paired combination of three or more interfacing and interlocking heads, as disclosed in *Melbye, et al* figure 2. The interlocking mushroom head system of *Melbye, et al* is obviously substantially different in structure and function from the uniquely distinctive, monofilament hooks as claimed herein by the Appellant. This may be seen by comparing Figure 2 of *Melbye et al* with Appellant’s Figures 4 and 5. As taught in Col. 4, lines 11-48 of *Melbye, et al*, even amongst the mushroom type fasteners there exists a broad spectrum of fastening properties, all of which contradict the underlying rationale that all hook components may be presumed to be the actual and obvious equivalents of one another. The composition, physical characteristics, such as break force, shear strength, T-Peel and manufacture are taught by *Melbye, et al* were deemed to be patentably and functionally distinguishable from all other fastener systems, as evident by the issuance of the *Melbye et al* patent claims thereto. It is important to recognize that *Melbye et al* extol the uniqueness and patentability of their mushroom fasteners over all other hook and loop fasteners

including all other mushroom type fasteners. Much of these differences in birefringence and functional properties is accomplished by the unique processing conditions by which they are made. If such functional differences exist amongst the fastening systems of *Melbye et al*, it is illogical (without any supportive art proof) to assume that all hook materials as a genus irrespective to their manufacturers or compositional make-up are equivalent to one another. If, after more than three decades (i.e. since *Ross* of 1972), the art was unable to discover any hook material capable of tangentially engaging, lifting, and releasing a grounded tennis ball amongst a myriad of known hook and loop fasteners, how can it be possible to conclude that all hook and loop fasteners (a genus) are equivalent to one another when, in fact, none worked until appellant's unexpected and unobvious inventive contribution? How, simply upon an isolated teaching of a good adhesive backing for a "wet" watering tube of *Smerdon*, can it be concluded that the ordinary artisan would summarily disregard an overwhelming body of contrary prior art teachings, and the ordinary artisan would be motivated by a false or misguided understanding that because U.S. Open and Wimbledon match plays are conducted in wet conditions would ipso facto apply the hook component to a tennis racquet in order to achieve a result which the prior art teaches is at best ineffective? The term "wet" as misapplied in the final rejections provides the entire rationale for seizing upon the good adhesion under "wet and warm" conditions of a SCOTCHMATE SJ3526 or SJ3527 and therefore would be the most fortuitous and illogical extrapolation of the prior art teachings to conclude the SJ3526 should be used in *Musslin* or *Feldi*. To reach such a far fetched and most fortuitous conclusion must involve placing blinders upon the skilled artisan so as to forget what the prior art, as a whole, actually teaches. The same want of teaching the unique monofilament hooked material noted by the Board of Appeals in the parent application appeal still remains untaught and unsuggested by the prior art.

The mere fact that the two hook and loop components serve as a hook and loop fastening system as a genus has no relevancy whatsoever as to the issue of an unknown tennis ball retrieving attachment, or more remotely, as to whether or not the claimed unique pre-shrunk nylon hooks of highly specific hook diameter, hook length, hook depth, hook width, spirally

arranged in repetitive rows in prescribed numbers as claimed can be deemed to be equivalent to all other known hooks including the *Melbye et al* mushroom type fasteners or would be suggestive of a hook species when the hook character is of no concern.

It is accordingly most important to understand that when *Melbye et al* refers to the VELCRO and SCOTCHMATE hook and loop garment fasteners in Col., lines 15-23, *Melbye et al* refers only to the conjoint use of both the mating hooked and mating loop components as “garment fasteners”. The *Melbye et al* Patent teachings cannot be construed as meaning all SCOTCHMATE hooked materials and all VELCRO hooked materials are equivalent to one another. Both the mating hook component and the mating looped component are required to provide the paired “garment fastener” use, as taught by *Melbye et al*. The Examiner’s reliance upon *Melbye et al* for allegedly establishing equivalency between all fastener combinations as well as the individual hook components of all “garment fasteners” including all VELCRO and SCOTCHMATE products is thus clearly in error.

Appellant’s Alleged Admission of Equivalency (All Issues and All Claims)

It is not surprising that the 35USC103 rejections must rely upon appellant’s own teachings or an erroneous position of appellant’s alleged admission of equivalency or a mere tangential relationship to appellant’s claimed invention for establishing facts which remain undisclosed and untaught by the art of record. None of the patents relied upon in the 35USC103(a) rejections suggest or teach equivalency between all hook components of the various different combinations of fastening systems. The Examiner has been consistently challenged by the complete lack of factual evidence which allegedly shows or proves that equivalency exists amongst all known hook components other than its use in a paired hook and loop fastening combination. There exists no such showing and accordingly the Office Action relies upon an alleged admission of equivalency to supply facts clearly untaught by the prior art. Merely because the hook and loop fastening system when used together will serve as a garment fastener (*Melbye et al*), fasten a drinking water tube to a bicycle handlebar stem when used in their intended manner as a fastener (*Smerdon*) or as a ball grasper (*Feldi*) when used as specially

designed to matingly adapted to hook and loop together (i.e. the “fastening system”) does not establish equivalency or a material relationship for anything other than the combined paired hook and loop fastening system. This does not establish a basis for arbitrarily selecting one component of the hook and loop combination and using the hook component in an entirely different relationship from the cited patent teachings or in unrelated combination for an entirely different purpose. The fact that it is common practice to equip both the hook and loop components (as a genus) with a pressure sensitive adhesive bears no relationship to the hook and loop hooking and looping efficacy or any equivalency therebetween (.e. suggestive of the species). The ineffective hooks of *Feldi*, *Musslin*, *Urwin*, *Ross*, *Schubert*, *Lamson*, etc., would still remain ineffective as clearly taught by the art of record. None of the cited art expresses any concern about hook size and character or more remotely what is required to effectively interrelate or uniquely matingly engage a tennis ball pile.

There exists no basis for alleging that the appellant has admitted the equivalency of her tennis ball retrieving attachment with all other ball retriever attachments. Appellant’s Rule 132 Affidavit of Record, the tabulated comparative test results of Appellant’s specifications, the teachings of the prior art relied upon in the final rejection and Appellant’s teachings in her specifications clearly substantiates that the hook component (apart from the hook and loop two component system) are neither the actual or obvious equivalent to one another, nor do they function alone in substantially the same manner to produce substantially the same results. A comparison between appellant’s specification Figure 4 and Figure 4 of *Melbye et al* clearly reveals this fact.

In order for equivalency to exist there must exist actual and obvious equivalency between that which is alleged to be equivalent.¹⁰ As shown above, a mere relationship does not establish that two different elements are the obvious equivalent. The second leg of equivalency is the need to establish actual equivalency. An integral part of any equivalency position is that the alleged equivalents must necessarily function in the same manner to produce the same or substantially the same result.¹⁰ Appellant tested *Melbye et al* and compared it with the claimed embodiments

of appellant's invention which test results as attested in Appellant's Rule 132 Affidavit clearly state and show that the mushroom shaped component, (without its mating strip component of the *Melbye et al* Patent) was totally incapable of engaging and lifting a tennis ball. The *Melbye et al* fastener is obviously not an equivalent to the unique and highly specific monofilament preshrunk nylon hooks as uniquely narrowly defined by appellant's appealed claims 1, 4, and 6-15. If an alleged equivalent is incapable of yielding an equivalent function, equivalency cannot exist. How can the Office Action in view of unrefuted and clear evidence whatsoever showing non-equivalency between hooked materials maintain without any substantiating evidence that all hooked materials are equivalent? Actual and obvious equivalency legally means performing in substantially the same manner to yield substantially the same result. One performs (appellant's discovery) and the others (*Melbye et al*, *Musslin*, *Feldi*, *Urwin*) does not perform. Equivalency does not exist. Appellant also tested a host of other monofilament hooked materials and reported selective test results of the best and, as reported in appellant's specification, found that such an alleged equivalency does not, in fact, exist amongst a host of other hooked components.

Appellant is entitled to rely upon the very art cited by the examiner in both 35USC103(a) rejections clearly reveals that equivalency does not exist (i.e. *Feldi* and *Urwin*) conclude that hook component cannot accomplish what appellant's claimed invention of claims 1, 4, and 6-15 accomplish. Although the appellant studied the efficacy of various different hook components amongst the host of available sources and consistent with these prior art teachings (see *Feldi*, *Urwin*, etc), none of those other hook components performed in substantially the same manner (i.e. tangential engagement) to produce substantially the same result (i.e. reportedly lift 4-6 times own weight for all major brand tennis balls) as the claimed subject matter of appellant's claims 1, 4, 6-9 and 10-15. Appellant's comparative example tests the tennis ball retrieving efficacy of various different hook component types and clearly shows that the nylon monofilament hooked material of Appellant's claimed attachment (claims 1, 4, 6, 7, 8 and 9-15) is neither the actual nor the obvious equivalent to any other hooked material. If appellant admitted the equivalence of her ball retrieving attachment to known attachments, then why would she ever file a patent

application claiming a unique tennis ball retrieving attachment of unexpected efficacy and its use to tangentially contact and retrieve all tennis balls. There accordingly exists no factual or legal bases as required under 35 USC 103(a) to rely upon Appellant's alleged admission of the prior art in the cited *Feldi* or *Musslin* and either in view of *Melbye* and *Smerdon* against appellant's claims 1, 4, 6-8, and 9-15.

As evidenced by the necessity of both Final Rejections to speculative infer certain matters" (clearly untaught by the prior art by relying the Appellant's findings as an alleged admission of equivalency), the final rejection is falsely predicated upon the use of Appellant's teachings to establish those untaught claimed embodiments of her invention. At the time of her invention, there existed no prior art teachings, no suggestions or no motivations which would guide or enable the Appellant to create the unique claimed embodiments of her invention. Only through her unexpected discovery of a unique tennis ball retrieving attachment **30** equipped with a highly specific hooked material **31** (of prescribed compositional and physical attributes) possessing a unique tennis ball nap **N** interrelationship and affinity for tangentially engaging and releasing (notwithstanding prior art clearly discouraging and leading her away from the claimed embodiments of her invention) was the Appellant able to accomplish the unique unexpected and unobvious attributes of her claimed invention herein.

An untaught, non-sequitur doctrine of equivalents based upon a mistaken alleged admission against interest and relying upon appellant's own teachings as prior art forms the entire basis for attempting to read undisclosed and untaught claimed limitations into the prior art teachings of record. Silence of the prior art is not a proper substitute for adequate facts from which conclusions of obviousness may justifiably follow.

Appellant's Discoveries are Untaught Previously as held by the Board of Appeals

(All issues and All Claims)

The compositional (preshrunken monofilaments hooks of claim 1, lines 6-7 and claim 4, lines 8-9; and disclosure page 8, line 17; page 9, line 17; and page 11, lines 8-12) and structural characteristics of the hooked materials **31** (e.g. average hook height **h**, width **w**, depth **H_d**, and

diameter **d** of the monofilament hook **31**) were unexpectedly found by the inventor to have a direct and unique bearing upon the efficacy of an unique and untaught attachment **30** equipped with a monofilament hooked material **31** which effectively retrieves tennis balls **T** upon tangential contact. As mentioned, this is a one-of-a-kind ball retrieving attachment **30** which was solely discovered from an unusual source by Appellant and solely found to possess a totally unexpected affinity for engaging and holding onto a nap **N** of a tennis ball **T** and then allow for repeated disengagement without destroying the tennis ball nap **N** so as to permit prolonged use of both the tennis ball **1** and attachment **30**. The ability to penetrate the nap **N**, to cooperatively engage the nap **N** upon tangential contact, and maintain its hooking structure so as to repetitively lift all major brands of tennis balls **T** represents an unexpected result discovered by appellant over what has been taught and suggested by the prior art of record. What could not be done as repeatedly reported by the cited art can now be done with the unexpected claimed embodiments of appellant's claims 1, 4, and 6-15.

All of the findings reported in Appellant's example including those of Tables 1,2 and 3 represent Appellant's own discoveries and findings. The unexpected discovery of the claimed attachment **30** equipped with the unique monofilament hooks **31** exhibit a four fold or greater tenacity over its closest rival of which all involve findings exclusively discovered and made by Appellant. The unexpected discovery that the claimed does not destroy the wool nap **N** upon repeated use represents appellant's exclusive discovery. The claimed monofilament hook **31** characterizations and measurements and the understanding of the interrelationship with the tennis ball nap **N** are Appellant's findings and not the prior art.

There would exist no need for Appellant to file her patent application if she deemed her ball retrieving attachment **30** to be equivalent to those known ball retrieving devices of the prior art. Throughout Appellant's specifications the uniqueness and unexpected efficacy of this one-of-a-kind hooked material has been stressed by Appellant (e.g. see Appellant's specification page 8, line 17; page 10, line example; and Tables 1-3 reports, page 15, line 12; page 16, line 12). As discovered by Appellant, as shown in her example, and as verified in Appellant's Rule 132

Affidavit, only one ball retrieving attachment **30** as discovered by Appellant and equipped with only one highly specialized hooked material **31** (as only claimed in all of the appealed claims) met these unique claimed prerequisites and only one attachment **30** was capable upon tangential contact to repeatedly hook and lift all of the major tennis ball brands. As may be observed, only this unique hooked material **31** customarily manufactured and adapted for paired use as a fastener combination with its mating loop strip **L** (as shown in Figures 3) for totally different industrial applications (i.e. as a hook and loop fastener system) fulfills these most stringent and uncommon claimed requirements of Appellant's claims. The tabulated and reported results beginning on page 15, line 12 of Appellant's Specifications attests to the uniqueness and superiority of the monofilament hooked fastener as prescribed by Appellant's Claims 1, 4, and 6-15 and particularly of Claims 4, 6-9 and 10-15. These unknown facts are disclosures of Appellant; not of the prior art.

Figure 2B and the partial cross sectional view of Figure 4 depict the unique tangential contact as claimed in all claims and engagement of the spirally pre-shrunk nylon aligned monofilament **31** hooks of the hooked material upon the tennis ball nap **N**. The spiral configuration of the monofilament hooks is illustrated in particular by Figures 3 and 4. Figure 4 is an enlarged view depicting the tangential engagement of the nylon monofilament hooks with the tennis ball nap or pile **N**. Figure 5 is an enlarged depiction of the pre-shrunk monofilament hook **31** showing in detail the hook height (**h**), the hook depth **H_d** and the hook width **w** and hook diameter **d**, all of which play an integral part in the unique cooperative interrelationship between the highly specific and uncommon pre-shrunk monofilament hooked material claimed herein and the nap **N** of the tennis ball **T** were discovered solely by Appellant.

The presumed obviousness conclusion remains totally unwarranted and unsubstantiated by the facts of record and the 35USC103(a) rejections rest solely upon Appellant's own teachings to guide the ordinary artisan through a mosaic of discordant patent teachings. Appellant has difficulty in rectifying the reliance of Appellant's own teachings (an alleged admission of prior art equivalency) with the decision of *In re Aufhauser* 158 USPQ which held:

“While, as above pointed out, wax-polyetyylene blends were known to the art, and while it was also known to the art that wax or polyethylene could be irradiated individually, the specific issue before us is whether irradiating a blend of wax and polyethylene, as taught by appellant, for the purpose of preventing separation of the wax and polyethylene components was obvious from the disclosures of the prior art. The fundamental error of the board and the examiner seems to us to have arisen from their analysis of the art as if it contained the knowledge of appellant’s invention. In other words, they proceeded to combine the prior art as if appellant’s invention was included therein as a part of the knowledge possessed by one of ordinary skill in the art. Such an analysis does not comport with that required by *Graham v. John Deere Co.*, supra. Instead, here as in *United States v. Adams*, 383 U.S. 39, 148 USPQ 479 (1966), what appellant had done was to *observe* an existing problem in the art which had not been solved by the prior art and then to *combine* individually old concepts to solve that problem.”

The prior art, as a whole, and Appellant’s claimed invention, as a whole, have not been duly assessed and evaluated as required under the Deere decision. The fact that the claimed invention was unknown and yielded truly unexpected results without receiving any consideration under 35USC103(a); and these facts alone should be acknowledged as being enough to rebut any *prima facie* case of obviousness.

Paragraph 3 - 35 USC 103 Rejection

(Claims 8, 11, and 13-15 and Issues II, III, V-XVI)

In paragraph 3 of the final rejection, claims 8,11 and 13-15 stand finally rejected under 35 USC 103(a) as being unpatentable over *Feldi*, or *Musslin* in view of *Melbye et al*, *Smerdon*, and Appellant’s admission to the prior art in her specifications as applied above in view of the *Urwin* Patent. For reasons pointed out, the newly cited *Smerdon* patent does not alter the conclusion that *Smerdon* does not correct the failings of the appealed parent application rejections.

The paragraph 3 final rejection relies upon the same combination of patents and appellant’s alleged admission as paragraph 2 of the final rejection above except for the addition of *Urwin* as a 35USC103(a) reference and thus the above arguments apply with equal merit to this 35USC103(a) rejection.

The wording of the aforementioned rejection of claims 8, 11 and 13-15 apparently

concludes that when all of the cited patent teachings are somehow mystically gleaned by randomly selecting isolated and discordant passages from each of the cited patents while necessarily relying upon Appellant's claims and disclosure as a template for determining what should be hindsightedly selected, then by fortuitously combining these randomly chosen passages in a manner taken out of the context in which they are found (singularly and collectively) and then by compounding the lack of prior art teachings by a reliance upon an alleged admission against interest by Appellant (relying upon Appellant's claims as a template) to bridge an art gap totally lacking and untaught from these randomly gleaned teachings to mystically create an alleged *prima facie* case of obviousness. This constitutes nothing more than hindsight reconstruction of prior art in reliance solely upon Appellant's own teachings to establish those clearly untaught and unsuggested facts always necessarily needed in order to establish any proper *prima facie* case of obviousness under 35USC103(a). All of the cited prior art unequivocally recognized that what was taught by the earlier patents (e.g. *Ross*, *Musslin*, etc.) was ineffective and as taught by *Feldi*, *Urwin* and *Lamson*, that the hook components of the hook and loop fastener combination are ineffective for use in tangentially retrieving a grounded tennis ball from a tennis court.

The Examiner additionally relies upon the *Urwin* Patent in the final rejection of claims 8, 11 and 13-15 for allegedly showing it would be obvious to position Appellant's unique tennis ball retrieving attachment "anywhere along the outer surface of the racquet frame". References or patents, when combined with one another, must take into account what the references (i.e. the patents), singularly and collectively, *as a whole*, fairly teach and suggest to one of ordinary skill. A skilled artisan does not read the *Urwin* patent in a vacuum for isolated passages which in view of another isolated patent passage, may bear some obscure relationship towards Appellant's claimed invention, but rather skilled artisans are motivated for that what meaning any of the cited patents as a whole may suggest or teach to one of ordinary skill.^{1,4&11} What is essential to the operation and function of the *Urwin* patent cannot be dismissed as unnecessary teachings when *Urwin* is combined with other patents in a 35USC103(a) rejection.¹ When *Urwin* teaches

something that cannot be done without enveloping and grasping the ball, such patent teachings in a reference combination under 35USC103(a) cannot be deemed to suggest and motivate an artisan towards a tangential contacting and engaging tennis ball retriever.¹² Artisans are not motivated by randomly gleaned, obscure and isolated passages which are not only discordant with what the patent itself teaches, but also discordant with those teachings of another patent with which these discordant passages have been combined for 35USC102(a) purposes. The final rejection accordingly fails to take into account the fact that the *Urwin* teachings, as a whole. *Urwin* actually reinforces Appellant's position that it would be unobvious to use Appellant's unique and unknown tennis ball retrieving attachment **30** in the manner in which it is used to tangentially contact and engage a tennis ball so as to permit the repetitive retrieval of all major tennis ball brands. Not only does appellant's claimed attachment **30** retrieve all tennis balls but also 4-6 fold the tennis ball's weight.⁷ All of this has been unexpectedly discovered by appellant without destroying the tennis ball nap or adversely affecting the delicate play and balance of the tennis racquet.

What motivation (without any knowledge of Appellant's invention) arises to one of ordinary skill having knowledge of the *Urwin* patent teachings as a whole to remotely perceive, much less discover, the claimed tangential tennis ball retrieving embodiments of Appellant's claims 8, 11 and 13-15? The *Urwin* motivation is that no hooked material by itself can tangentially engage and lift a tennis ball, but if you change the ball retrieving attachment to "an arcuate tennis ball grasper of a contour mating onto the contour or curve of the tennis ball", then you can effectively lift the tennis ball. *Urwin* clearly directs and motivates the artisan away¹² from the unknown discovery of a uniquely different tennis ball retrieving attachment used in an entirely different manner from which *Urwin* teaches to achieve a totally unexpected end result all of which represents under all existing patent standards an unobvious invention.⁷ The use and reliance upon *Urwin* in the 35 USC 103(a) rejection based upon *Feldi* (same teaching away problem) or *Musslin* in combination with *Melbye et al* is clearly in error since it destroys the essence of the *Urwin* teachings, as well as rendering *Urwin* unfit for its intended purpose.¹ The

Urwin patent combination, as applied, destroys the mode of operation and entire underlying purpose of the *Urwin* patent teachings.

The mere fact that *Urwin* uses a paired hook and loop fastening system to attach the “arcuate frame having a concave interior surface configuration in similar shape to arc on the spherical surface of a tennis ball” (e.g. see *Urwin* Col. 5, lines 37-39) has no relevancy under 35 USC 103(a) to Appellant’s claims 8, 11 and 13-15 or the establishment of grounds for a *prima facie* case of obviousness herein. The gripping means (**30** and **40**) attached at a one o’clock position and butt end of the racquet are not designed for direct tennis ball contact, but rather provides a paired hook and loop fastening system which allows the butt end gripping member **10** to be removably attached to the racquet from the gripping means. What motivation does the *Urwin* teachings, as a whole, have towards the establishment of a *prima facie* case of obviousness? How does Appellant’s claimed tangential tennis ball retrieving attachment **30** in any form or manner relate to the essential graspingly grip the tennis ball as required by *Urwin*? Contrary to the Examiner’s position, the *Urwin* teachings, in conjunction with either *Feldi*, or *Musslin* and *Melbye, et al* and *Smerdon* provide clear evidence of the absence of any *prima facie* case of obviousness. Both *Feldi* and *Urwin* conclude that what Appellant’s claims as her invention (tangential contact and retrieval) cannot be done. An appellant is “entitled to rely on the fact that the most specific teaching cited by the examiner, uncontradicted by the art of record, led away from what appellant claimed.”¹¹ *Musslin* leaves the artisan with nothing but a vast number of different types of unidentified materials falling within its all encompassing teachings device. *Musslin* thus fails to provide any guidance whatsoever and is totally negated by the more current teachings of both *Feldi* and *Urwin*. *Melbye, et al* fails to provide any guidance or motivation by disclosing an inapposite mushroom type fastening system (which is saliently different and **also DOES NOT WORK**) coupled with teachings disclosing that a broad array of diversified products with differing hook and loop fastening system combinations may be produced by varying the processing conditions of manufacture (e.g. molecular orientation by cooling of col. 3, lines 23-26, 40-52, and col. 5, lines 1-7. Example 1: Tables 1 and 11 etc. as

taught by *Melbye et al*). *Melbye, et al* teach and contradict the essence of the Examiner's unsupported conclusion that equivalency may be arbitrarily assumed by reason that the paired hook and loop fastening systems are manufactured and designed to fasten together. Even amongst the hook mushroom type fasteners of *Melbye et al*, substantial differences arise by reason of manufacturing conditions, molecular orientation, structure and chemical composition. Equivalency may not be presumed or established upon the basis of a mere relationship or appellant's own findings. Lastly, the claimed unexpected results of Appellant's invention could not be predicted from the prior art teachings, as a whole, which collectively taught Appellant's claims 8, 11 and 13-15 could not be done.^{6&7}

Urwin has been relied upon for allegedly teaching that the hook and loop fasteners may be placed anywhere along the outer surface of the racquet frame. Appellant is not claiming a ball retrieving attachment comprised of a paired hook and loop fastener system (genus or any hook material) placed upon a shoulder of a tennis racquet. Appellant's claims 8, 11 and 13-15 limited by the words "consisting essentially of" are directed towards a unique and unknown ball retrieving attachment in the form of a strip adhesively attached to an outer surface of a tennis racquet and its use, which because of its uniqueness, including the claimed monofilament hook structure, possesses a unique undisclosed and unknown ability simply upon tangential contact to engage the nap and to lift repetitively all major brands of tennis balls. *Urwin* cannot do this and clearly requires a cumbersome, protruding ball grasping attachment which follows the contour of the tennis ball cover so as to envelope the ball, as opposed to the claimed "tangentially contacting the grounded" tennis ball. In contrast to Appellant's claims 8, 11 and 13-15 of a ball retrieving strip attached to the shoulder of the tennis racquet in a streamlined fashion from a nine o'clock position to about a three o'clock position, *Urwin* attaches a bulky, protruding ball shaped gripping member **10** to the tennis racquet using the hook and loop gripping means **30, 40, 24** and **26** so as to removably attach and detach the ball gripper **10** from the racquet. The most appropriate position for not interfering with tennis play is at the butt end of the *Urwin* handle as shown in *Urwin* Figure 6. Any other cumbersome and unbalanced placement upon the racquet

would adversely effect the play of the more avid and talented tennis player. *Urwin* also teaches in col. 4, lines 11-13 “that the location just offset from the top provides the most effective location for using the tennis racquet”, (i.e. at one o’clock as shown in *Urwin* Figure 1). It is not surprising that *Urwin*’s ball gripper **10** includes removable hook and loop attaching means (**30**, **40**, **24** and **26**) so that it may be easily removed during tennis play. In complete contrast to *Urwin*’s enveloping of the tennis ball, the claimed strip of Appellant’s claims 8, 11 and 13-15 allows for only tangential contact between the attachment and the tennis ball as claimed. The claimed strip applied and following the contour of the tennis racquet shoulder only permits tangential contact while also allowing the tennis racquet in tennis play to aerodynamically slice through the air without hindering or adversely affecting play. *Smerdon* adds nothing for the want of suggestive teachings of concern to unique hook size and characterization and its relationship to a tennis ball pile.

Method Claims 10-15 - Patentability (All Issues)

The method claims 10-15 provide a method for retrieving a grounded tennis ball **T** with a tennis racquet **2** equipped with a unique ball retrieving attachment **30** attached along an outer peripheral edge of a shoulder **12** of the tennis racquet **2** with the hooked material positioned (e.g. see Figures 1, 2A, 2B, 6 & 7) thereupon at a retrieving position for tangentially engaging and lifting a grounded tennis ball **T** upon tangential contact therewith. (see Figures 2B & 4)

The initial unknown step (claim 10) of providing as a tennis ball retrieving attachment **30** a strip of a hooked material **31** having a pressure sensitive adhesive **33** applied to a resilient backing member **32** equipped with a plurality of pre-shrunk nylon monofilament hooks **31** of an average monofilament diameter **d** of at least 8.0 mil, an average hook height **h** of at least 1.85 mm, an average hook width **w** of at least 1.0 mm, and an average hook depth **H_u** of at least 0.6 mm, with the hooks being of a spiral configuration arranged in repetitive rows of at least 250 hooks per square inch claims a narrowly defined and unique pre-shrunk nylon hooks **31** which when applied to the outer peripheral edge **12** of the tennis racquet’s shoulder **11** at the retrieving position of step **(b)** so as to unexpectedly allow the uniquely distinctive ball retrieving

attachment **30** including monofilament hooks **31** of the strip **30** upon tangential contact with the grounded tennis ball **T** (as shown in Figures 2B) to engage onto the tennis ball nap **N** to consistently lift the hooked tennis ball nap **N** (as shown in Figures 2B & 4) to a ball retrieving position involve a completely unknown steps of a tennis ball retrieving method. The unique engaging and disengaging characteristics of the unique pre-shrunken nylon monofilament attachment were unknown and deemed by the prior art to be impossible. These essential prerequisites, as claimed, were unknown. The hook and loop fastening art constitutes an immense body of art embracing a multitude of chemically diverse fastener system. The fact that the tangentially engaged tennis ball **T** may then be lifted and easily retrieved (without fail) from the strip without stooping or bending involves the unknown. An important aspect of Appellant's invention rests upon a uniquely different attachment **30** of monofilament hooks **31** characterized by a narrowly defined strip of monofilament hooks **31** possessing uncommonly different characteristics and capabilities from all others (i.e. the genus). There exists an extraordinary and uncommonly different cooperative interrelationship between the tennis ball of nap **N** of a standard tennis ball **T** and Appellant's claimed tennis ball attachment **30** which permit the claimed unexpected superior efficacy of Appellant's invention to be achieved. The unobviousness of the claimed method of providing an uncommon tennis ball retrieving attachment **30** having saliently different structural characteristics (i.e. diameter, height, width, hook depth) and that these saliently different and unique characteristics yielded a unique and unexpected result heretofore unknown and untaught is clearly evident from the cited patents of record. The method claims 10-15 require the discovery of an uncommon and unknown tennis ball retrieving attachment 30 with a unique ability to tenaciously engage a tennis ball nap and retrieve all tennis balls by tangential contact therewith.

The final rejection of appellant's method claims 10-15 presupposes that the skilled artisan would be motivated upon the basis of the cited patents to equip a tennis racquet with an unknown tennis ball attachment (unknown to have an unexpected and unique affinity to a tennis ball nap) comprised of a strip of a saliently different claimed hooked material structure from what is

disclosed in any of the combined patent teachings by applying the pressure sensitive strip of the ball retrieving attachment **10** to the outer peripheral edge of the shoulder of the tennis racquet, then by “tangentially contacting the tennis ball”, so as to engage and hook the wool nap of the grounded tennis ball onto the nylon monofilament hooked material, a tennis player would then be able to repetitively engage, lift and consistently retrieve all brands of tennis balls thereby. There exists no motivation to discover such an unknown tennis ball retrieving attachment amongst a vast array of different hook and loop fastener much less effectively use such a device or to remotely comprehend that what the prior art says cannot be done, can be done. Assuming *arguendo* that a *prima facie* case of obviousness exists, the unexpected results, especially in light of prior teachings (e.g. see *Feldi*, *Lamson* and *Urwin*) saying it cannot be done with the genus hook material provides an unrefuted and clear rebuttal of any such *prima facie* case of obviousness.

How can an undisclosed and untaught ball retrieving attachment be presumed to be known when the collective teachings (i.e. *Urwin*, *Feldi*, *Musslin*, *Smerdon* and *Melbye, et al*) of the combined patents (as acknowledged and verified by *Lamson*) fail to teach the untaught and essential embodiments of such tennis ball retrieving attachment exists?¹¹ How can a tangential contacting ball lifting attachment be presumed to be obvious when, in fact, the very art which is relied upon for the assumed “*prima facie* case of obviousness” teaches¹² that you cannot effectively retrieve tennis balls upon tangential contact and that your choices are to either alter the tennis ball retrieving attachment to the curvature of the tennis ball surface (*Urwin*) or completely change the tennis ball cover to a hook and loop fastening system (e.g. *Feldi*), and especially in view that none of the cited patents bear any relevancy to the unknown tennis ball retrieving attachment of Appellant’s claims 10-15? As aptly held in the decision of *In re Dow Chemical Co.* 837 F.2d469, 5 UPSQ2d 1529 (Fed.Cir. 1988):

“Recognition of need, and difficulties encountered by those skilled in the field, are classical indicia of unobviousness.”

If no one knows of the tennis ball retrieving attachment as prescribed by Appellant’s

method claims 10-15, how can it be presumed obvious to discover the unknown and use the unknown tennis ball retrieving attachment in the methodology as prescribed by Appellant's method claims 10-15? Is it obvious to use an unknown ball retrieving attachment to achieve unexpected ball retrieving results in the face of prior art teachings which collectively teach it cannot be done?

These facts herein are reminiscent of *In re Buehler* - 185 USPQ 781 in which the CCPA noted that:

“Appellant's claimed method, however, involves doing what Clark tries to avoid.... Appellant has invented a method...when the prior art (Clark) strongly suggests that such method would produce.... unacceptable results. This is the very antithesis of obviousness....The prior art...does not teach or even hint at appellant's discovery...”

Legal Support of Unobviousness Conclusion (All Rejections, All Claims and All Issues)

The final rejection Appellant's claims 1, 4 and 6-15 is flawed by a failure to follow the M.P.E.P. guidelines, the statutory requirements, and established case law coupled with the absence of several crucial elements which are necessarily essential to establish any valid rejection claims or *prima facie* case of obviousness involving a combination of references under 35USC103(a). The final rejection (as pointed out in previous response by Appellant) fails to follow those obviousness guidelines as clearly established by the Manual of Patent Examination and Procedures. These unfollowed guidelines include:

1. A failure to take in consideration Appellant's claimed invention, as a whole, including all the claimed elements of the invention, as well as the unique and unexpected results that have been achieved as a result of the Appellant's unobvious invention.
2. A failure to provide the necessary factual background (including all the claimed elements) in support of a valid *prima facie* case of obviousness.
3. A failure to appraise and properly evaluate the individual and collective patent teachings of record as a whole, including those patents relied upon in the 35 USC 103(a) rejections.
4. A failure to apply the appropriate legal standards and considerations in concluding that all of Appellant's rejected claims are obvious under 35USC103(a).

A necessary prerequisite in establishing *prima facie* case obviousness in any claimed invention requires that all the claimed limitations must be suggested or taught by the prior art (e.g. see M.P.E.P. 214303.03 In re: Royka, 490 F.2D 981,18/0USPQ/58,(CCPA/1974) without any reliance upon Appellant's findings to supply matters untaught by the prior art:

“All of the disclosures in a reference must be evaluated for what they fairly teach one or ordinary skill in the art... .. when all of the disclosures in a reference are considered, the overall suggestion to emerge from the prior art reference may be contrary to that which might appear from an isolated portion of the reference.” In re *Langer et al*, 175 USPQ 169.

Equally important is to recognize that the claimed invention includes not only those claimed embodiments recited in the claim, but also the unexpected results which are achieved or provided by an invention (i.e. the invention as a whole).⁷ Appellant's claims clearly point out and distinctly claim that the invention relies upon a unique and unknown tennis ball retrieving attachment equipped with a highly unique and distinctive characterization of a one-of-a-kind hooking material which is capable merely upon tangential contact with a tennis ball nap to engage and lift repetitively all major brands of tennis balls without damaging the tennis ball. This is truly an unexpected and untaught result which, in light of the very art relied upon in the final rejection, could not be accomplished.

The primary reference (*Feldi*) and a necessary secondary reference (*Urwin*) in the 35USC103(a) rejection of claims 8, 11 and 13-15 clearly teaches that what the Appellant has accomplished cannot be accomplished in the manner in which it was accomplished. Even if it were deemed that sufficient facts existed upon the basis of the combined patent teachings to establish a *prima facie* case of obviousness, then the unexpected results of the Appellant's invention (especially in light of the patent teachings which very explicitly say that what Appellant has accomplished cannot be done) constitutes more than sufficient grounds to override any such *prima facie* case that might have existed.

In the 35USC103(a) rejections of record, there exist no teaching of a tennis ball retrieving attachment equipped with a very narrowly defined, specific and unique different hooked material.

Neither *Feldi* nor *Musslin* nor *Melbye et al* nor *Urwin* nor *Smerdon* in the 35USC103(a) rejection of claims 1, 4 and 6-15 disclose or remotely contemplate an attachment meeting such unusual claimed prerequisite elements. The finding of such a tennis ball retrieving attachment and characterization all involve unexpected findings solely known to appellant. *Urwin* as applied in combination with *Feldi* or *Musslin* and *Melbye et al* in the final 35 USC103(a) rejection of claims 8, 11, and 13-15 recognizes the complete paucity of the prior art in disclosing or suggesting this essential claimed embodiment of appellants tennis ball retrieving attachment and even more unexpectedly its unexpected efficiency in retrieving tennis balls via tangential contact, engagement and lifting of a tennis ball nap. The requirements and the unexpected results solely involve contributions by appellant of matters neither known or expected upon the basis of the cited prior art teachings (i.e. *Feldi*, *Musslin*, *Melbye et al*, *Smerdon* and *Urwin*).

The final rejection fails not only to provide the necessary factual background to support a valid 35USC103(a) rejection, but also fails to properly evaluate what the individual teachings of the patent of record, as a whole, fairly teach and suggest to the artisan of ordinary skill, as well as what the collective or combined teachings of the cited patents (as a whole) may be deemed to fairly teach and suggest to an ordinary artisan. The whole thrust of the Examiner's position rests in an attempt to establish that the claimed unique and distinctive monofilament nylon ball retrieving attachment unexpectedly discovered by Appellant was known to the art by relying primarily upon three patents (*Feldi*, *Melbye et al* and *Smerdon*), each of which fail to teach what the Examiner alleges they teach, much less the erroneous factual conclusions that all hooked materials (irrespective of their structure, their chemical composition, their molecular character, their method of manufacture, etc.) may legally be regarded as equivalents. The manner in which prior art teachings have been gleaned for discordant teachings flies directly in the face of a long established case law that:

“A necessary corollary is that all words in the claim must be meaningfully considered before judging the patentability of any given claim against the prior art (e.g. see in re: Wilson 165 USPQ 494 CCPA1970).”

Feldi and *Melbye et al* do not provide any factual or legal grounds for the equivalency position as relied upon in the final rejection of Appellant's claims.¹⁰ As pointed above, the claimed ball retrieving attachment bears no equivalent relationship to the hook and loop garment fastener of *Urwin* or the paired hook and loop fastening system of *Feldi* or the SCHOTCHAMTE SJ3526 or SJ3527 of *Smerdon*.

The Examiner's equivalency position simply rests upon a gleaning of the patent literature as a means for establishing a relationship between the cited art and the undisclosed claimed embodiments of Appellant's claimed tennis ball retrieving attachment. Broad indelible words and phrases such as the paired "hook and loop fastening system" of *Feldi*, the "garment fasteners" of *Melbye et al*, and the paired VELCRO and SCOTCHMATE hook and loop fasteners, the *Smerdon* good "wet and hot adhesive backing" teachings of SCOTCHMATE SJ 3526 or SJ3527 have all been gleaned from the cited patents (irrespective of the fact that the patents' teachings are inapposite to appellant's claims) or fabricated without facts (e.g. the wet Wimbledon or U.S. Open tennis events) in an attempt to establish a mere relationship. Any attempt to establish equivalency or bridge the genus to the unique species just because of a known relationship (even though they don't work, such as in *Melbye et al*, *Urwin* and *Feldi*, or relate to an assumed but false fact cannot be legally reconciled with the well established legal doctrine:

"...A mere known relationship between acetals and esters as disclosed by the isolated portion of Enk upon which the board relied is insufficient to support the rejection. As distinguished from a disclosure of equivalents, the disclosure of a known relationship does nothing more than teach that it would have been obvious to try, which is insufficient under section 103. In re Lindell, 55 CCPA 707, 385 F.2d 453, 155 USPQ 521 (1967). Many compounds have a known relationship but are not equivalents for substitution in different reactions. A mere relationship is an insufficient basis for the necessary predictability of success to sustain a rejection under section 103." See In re Naylor 54 CCPA 902, 369 F.2d 765, 152 USPQ 106 (1966) and In re Mercier - 185 USPQ 774.

As also stated in ex parte Price et al 150 USPQ 467 (P.O.B of App. - 1966):

"The examiner states that oxygen and sulfur are regarded as equivalent in this art. This is always an attractive generality but we are not convinced that it disposes of the instant

issue of obviousness. The secondary references do not convince us that the particular substitution involved here would be obvious.”

Even more importantly, the whole equivalency argument by the Examiner rests totally upon what is only known to Appellant (alleged admission of equivalency). This is legally inappropriate as firmly established in the decision *In re Ruff* (1958 45 Cust & Pat App (Pat) 1037,256 F2d 590, 118 USPQ 340 which stated:

“To rely on equivalents known only to applicant to establish obviousness is to assume that his disclosure is part of prior art; this is contradictory to SEC 35 USCS 103 wherein test laid down is whether difference between what is claimed and prior art would have been obvious to one of ordinary skill in art at time invention was made. Actual equivalence is not enough to justify refusal of patent on one member of group when another member is in prior art; equivalence must be disclosed in prior art or be obvious within terms of SEC 35 USCS 103.”

The equivalency standard requires not only that *obviousness equivalency* exists but also that they must be the *actual equivalents* to one another. The “test of actual equivalency is whether substituted element operates in substantially same way to produce substantially same result as element replaced” *In re Shaffer* 108 USPQ 326 (CCPA 1956). None of the patents or references relied upon by the Examiner disclose appellant’s claimed tennis ball retrieving attachment and the method of its use. The disclosed ball retrievers of the prior art all fail to meet this standard of “operating in substantially some way to produce substantially some result as element replaced.” None of the cited elements produce appellant’s claimed results. Equivalency accordingly does not exist. The prior art teaches precisely opposite from what the final rejection presumes to be equivalent.

The *In re Shaffer* decision also has a direct bearing upon the obviousness conclusion by its holding:

“Although references may be combined to show that claim is unpatentable, they may not be combined indiscriminately; criterion to determine whether prior art suggests doing what applicant did; when references are combined to negate patentability, it should also be considered whether one skilled in art with references before him could have made combination of elements claimed without exercise of invention; it is not enough for valid rejection to view prior art in retrospect once applicant’s disclosure is known.”

The Examiner's analysis of the prior art hinges upon the alleged fact that *Feldi* teaches that all hooked materials of VELCRO or any other brand are equivalent. Unfortunately, the correct factual analysis of those *Feldi* "VELCRO" or any other brand hook and loop fastening system teachings (as clearly understood by the ordinary artisan and plain language of *Feldi*) involves the paired and mating two-component fastening system, namely, a paired hook component and a paired loop component of the mating fastening system which are specially manufactured and adapted to engage and fasten onto one another. The hook alone is not the paired hook and loop "fastening system", nor is the loop alone the paired "hook and loop fastening system". This is a far cry from saying that all of the hooks of any hook and loop fastening system may be legally and factually deemed to be an obvious equivalent and an actual equivalent to one another. The patent law does not permit the hypothetical extension of teachings of genus to species, much less actual and obvious equivalency, to embrace subject matter which is clearly not taught by a reference. When *Feldi* talks in terms of a "fastening system", *Feldi* is not referring only to the hook, but rather only to the combination of a "hook and fastening system" as a genus which are specifically designed and used to fasten together. These *Feldi* teachings have no relevancy to a very unique one-of-a-kind nylon monofilament hooked material of Appellant's claimed and unknown ball retrieving attachment. Nothing in *Feldi* suggest any hook material will provide the claimed combination let alone the unique claimed hooked material combination. The mating hook and loop fastening system of *Feldi* is neither Appellant's unknown claimed ball retrieving attachment, nor does it provide the unexpected and untaught efficacy upon tangential contact with a tennis ball so as to superbly and uniquely engage and repetitively lift all brands of tennis balls thereby. Thus, it should be self evident that *Feldi* provides no factual basis, guidance or motivation whatsoever for the alleged equivalency between what is taught by *Feldi* and what has been solely and uniquely discovered by the Appellant. The law clearly establishes that knowledge known only to a patent applicant cannot be used or imputed under USC103(a) as knowledge known by the ordinary artisan. Equivalency cannot be based upon what is known only to a patent applicant.

The two 35USC103(a) final rejections are accordingly based upon a host of unfounded or untaught assumptions (for which proof has demanded by verified support) which when collectively combined using appellant's claims as a template allegedly teach appellant's claimed invention. Including amongst these erroneous assumptions are:

- 1) All hook components of all hook and loop garment fasteners are equivalent to one another.
- 2) All VELCRO and all SCHOTCHMATE hook and loop fasteners are equivalent to one another.
- 3) The application or use of a hook fastener adhered to the side of the handlebar stem and a loop fastener around the circumference of a watering tube as a hook and loop combination suggests the sole use of the hook component by adhering it onto the shoulder of a tennis racquet notoriously known to be different in construction from chrome handlebar stems and plastic or rubber construction of water tubes.
- 4) The false allegations and assumption that the Wimbledon and the U.S. Open are played in "hot, wet and damp conditions" when in fact the events are cancelled when wet such as by rain for safety and other reasons.
- 5) By initially falsely assuming the Wimbledon and U.S. Open are played in wet conditions and then assuming that the "good adhesion in wet and warm conditions" for the hook and loop fastening together of handlebar stem and drinking tube outlet of *Smerdon* would ipso facto lead the ordinary artisan to apply to a tennis racquet of an inherently different construction and used under entirely different conditions.
- 6) The loop component as well as the hook component of the hook and loop combination of *Smerdon* may be summarily dismissed as a meaningless element other than its genus hook and loop fastener system in the same manner the *Melbye* and *Feldi* patent have been applied in the 35USC103(a) rejections.

- 7) The ordinary artisan in light of clear teachings of the cited statutory that the hook component is ineffective to tangentially engage and lift a grounded tennis ball would select, amongst a host of others, *Smerdon*.
- 8) The ordinary artisan would ipso facto do something which directly contradicts the prior art.
- 9) The ordinary artisan is guided by abstract, theoretical and abstract considerations, prone to undertake an exercise in futility, prone to indiscriminately change the structure of the most learned patent teachings when no practical considerations to promote the progress of useful arts or are of use to society are manifest thereby, to derive a unique species form a vast genus (e.g. see *In re Fay* 146 USPQ 47, (1965), *In re Stemniski*, 170 USPQ 343, (1971) and *In re Tubrusky*.).
- 10) Obviousness in structure and the invention as a whole may be presumed when there exists upon the basis of the prior art teaching or no useful purpose to be served by such a theoretical modification of the prior art devices.
- 11) The essential and functional elements of appellant's claims may be negated by back door considerations (i.e. good adhesive character for bicycle handlebar stem) which bears no practical considerations to the contrary patent teachings (hook will not effectively work) and the unexpected efficacy of the claimed invention.
- 12) The unexpected efficacy of appellant's one-of-a-kind unique may be presumed or assumed to exist upon the basis of ineffective and contrary prior art teachings which clearly teach to the contrary.
- 13) A mere unrelated relationship amongst a vast field of almost unlimited choices does not provide grounds to dissect a mating combination and use the dissected component for an entirely different purpose.

The Patent Office Board of Appeals in the decision of *ex parte Tannaka et al* 174USPQ38 (1971) involved a final rejection lacking any disclosure or suggestion of a claimed modification which was properly reversed by the Board on the grounds that:

“There existed no “prima facie case of obviousness “since there is no suggestion in the prior art that such a result could be accomplished by so modifying prior art devices...”, “...none of the references alone or when taken in combination suggest the missing feature of appellant’s claimed invention.”

The same speculative assumption arises by the reliance upon the “Widely used garment fasteners” are hook and loop fasteners such as currently marketed under the trademark VELCRO by VELCRO U.S.A., Inc. and under the trademark SCOTCHMATE by 3M Company” of *Melbye, et al.* These *Melbye, et al* teachings bear no relevancy whatsoever to the claimed embodiments of the Appellant’s unique and unknown tennis ball retrieving attachment. As pointed out above, the paired hook and loop components of “garment fasteners” of *Melbye, et al* or the “fastening system” of *Feldi* when utilized together in the manner intended by the manufacture will then serve as “garment fasteners”. This does not in any form or manner mean, suggest, or teach that you can use a hook from any fastening system and apply it to any and every type of material known to mankind. Both of the randomly gleaned *Melbye et al* and the *Feldi* teachings relied upon by the Examiner pertain only to a fastener combination or “fastening system” which relies upon both the paired hooked and looped component as especially paired and designed by their respective manufactures to function (as sold and distributed) as a fastening system by cooperatively fastening onto one another. In the same manner recognizing that there existed no mention or disclosure whatsoever of the claimed hook element and its unique function, the Examiner scanned the search field for a mere mentioning of SCOTCHMATE SJ3526 in an inapposite patent setting and indiscriminately combined the disjointed teachings with another inapposite patent teachings solely by reason of appellant’s discovery providing meaning to an otherwise indelible teaching. Such teachings do not in any form or manner direct or motivate the artisan towards the uniquely different claimed embodiments of Appellant’s heretofore unknown ball attachment which has distinctively different characteristics from what is taught by the patents (singularly and collectively) and which has the solitary ability upon tangential contact to uniquely engage and lift all brands of tennis balls without damage. Within this context, the Board’s attention is directed towards *In Re Meinhardt and Shuman* 150USPQ54

(CCPA, 1966) which held:

“35USC103 requires the court to evaluate the claimed subject matter as a whole against teachings of the prior art references of record; references are evaluated by ascertaining facts disclosed therein as a whole; it is impermissible to first ascertain factually what Applicant did and then view prior art in such a manner as to select from random facts of that art only those which may be modified and then utilized to reconstruct Appellant’s invention from such prior art.”

This is precisely the approach taken in the reliance upon the hook and loop fastening system and hook and loop garment fastener of *Melbye, et al, Smerdon* and *Feldi* in the final rejection. There exists no art whatsoever which would remotely lead or suggest to the ordinary artisan those unknown embodiments of the very highly specific and unique tennis ball retrieving attachment of Appellant’s claimed invention and its use or even more remotely any anticipation whatsoever that such clearly unexpected results would be achieved as claimed in Appellant’s claims 1, 4, and 6-15. The 35 USC 103(a) rejections of Appellant’s claims 1, 4, and 6-15 accordingly cannot be reconciled with *In Re Warner* 54CCPA/1628,154USPQ173 (1967) which held:

“Rejection based on section 103 clearly must rest on a factual basis and these facts must be interpreted without hindsight reconstruction of the invention from the prior art. In making this evaluation all facts must be considered. The Patent Office has the initial duty of supplying the factual basis for its rejection. It may not because it may doubt the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in its factual basis.”

There exist no basis (other than hindsight) to foresee or remotely anticipate that a unique, one-of-a-kind hook element (amongst a host of others) would effectively engage and lift all major tennis ball brands and disengage all major tennis balls upon repeated performance without causing damage and therefore overcome long established problems in a manner which contradicts the prior art teachings relied upon in the 35USC103(a) rejection. The *Lamson* patent reiterates the futility of attempting to use the hook component of the hook and loop fastener combination while suggesting instead, the use of the adhesive backing to retrieve the tennis balls.

An analogous situation involving the leading away teachings of the cited patents of record herein may be found in the Tenth Circuit Court of Appeals decision of *Staley Manufacturing vs.*

Harvest Brand, Inc. 171 USPQ/795 (1971), in which the Tenth Circuit held:

“That although all elements were old and known in the prior art, their combination was patentable since it overcame all the problems and went against the teachings of the prior art.”

Another oft cited Court of Customs Patent Appeals decision of *In Re Wesslau* 147/USPQ/391 (1965) directly reflects upon the facts and legal considerations herein in which decision the CCPA concluded that:

“It is impermissible within the framework of section 103 to choose from any one reference only so much as it would support a given position to the exclusion of the other parts necessary to a full appreciation what that reference fairly suggest of ordinary skilled in the art.”

Appellant “may rely on the fact that the most specific teachings cited by the Examiner, uncontradicted by the art of record, lead away from what applicant claims”, (e.g. *In re Lundsford* 148 USPD 721 (CCPA 1966). A full appreciation of *Feldi* requires both the hook and loop fastening system as the only manner in which tangential engagement and lifting between the tennis ball and the attachment will occur. A full appreciation of *Urwin* teaches that you must use an attachment which graspingly surrounds the tennis ball since tangential contact will not work. *Melbye, et al* teaches mushroom type fasteners. *Musslin* teaches nothing about Appellant’s unknown claimed tennis ball retrieving attachment which all of the enabling and subsequent patent teachings acknowledge. *Musslin* attaches no concern to hook size and character. *Smerdon* has been applied in a vacuum with complete disregard to the conjoint use of a SCOTCHMATE SJ3526 for a different purpose in completely different environment with distorted unsubstantiated assertions and speculative innuendos being relied upon to force the combination of *Smerdon* with the remaining 35USC103(a) reference combination. *Smerdon* has no concern about hook size or character. The essence of the cited teachings cannot be disregarded in any rejection of Appellant’s claims 1, 4, and 6-15 since the cited patents collectively teach the futility and unexpectedness of the claimed embodiments of Appellant’s claims 1, 4, and 6-15.

The present final rejection relies extensively upon piece meal disassembly and examination of the prior art solely in light of Appellant's contribution and a reconstruction of disjointed pieces, totally in light of Appellant's own invention, to fabricate an alleged *prima facie* case of obviousness. *Feldi* involves the use of a two component fastening system which includes both the hook component and the loop component. The *Feldi* ball cover is changed necessarily so that it either contains the paired hook component or the paired loop component and the mating opposite of the "hook and loop fastening system" for the tennis racquet so that there exists mutual cooperative engagement for the "ball gripper" concept. Both the "hook and loop" of the "fastening system" are required in order to fulfill the "ball gripper" concept or idea of *Feldi*. The same defect exists in the application of the garment fasteners identified as "hook and loop fasteners" marketed under VELCRO and SCOTCHMATE trademarks and "mushroom-type fasteners" of *Melbye, et al.* The decision of *In Re Pye and Peterson* 143 USPQ 426 provides guidance as to the issue of properly combining references under 35 USC 103 by holding that:

"While, as an abstract proposition, it might be possible to select certain statements from references and mechanically combine them with other references to arrive at Applicant's claimed combination, there is no basis for making such a combination; neither reference is directed to the problem solved by Applicant's invention. Only Applicant's specification suggests any reason for combining teaching of prior art, but use of such suggestion is improper under 35 USC 103."

Wherein does *Feldi*, *Musslin*, *Smerdon* or *Urwin* have any reference to the problem solved by appellant. What within the immense field of hook and loop fasteners would lead an ordinary artisan to a one-of-a-kind hook component except for unfounded conjecture based solely upon appellant's own teachings to the unique cooperative interrelationship between a tennis ball nap and a solitary and unique claimed hooked material attachment? What meaning and relevancy does an adhesive backing of a hook and loop fastener have upon the efficacy of a hook component to effectively tangentially engage and disengage the nap of all tennis ball brands? Recognizing that there exists no disclosure of Appellant's claimed tennis ball attachment,

reference is also made to *Shaffer* USPQ326 (CCPA1956) which held that:

“Although references can be combined to show that a claim is unpatentable they may not be combined indiscriminately. Criterion to determine whether the combination is proper is whether the prior art suggest what the appellant did. None of the references suggest what the Appellant has done here.”

There is no suggestion in the cited prior art whatsoever to first discover and then utilize a totally undisclosed and untaught one-of-a-kind tennis ball retrieving attachment (unknown) in the manner as taught and claimed by the Appellant herein, and even more astoundingly, to accomplish what could not be accomplished. The indiscriminate use of *Smerdon* is evident first of all by the irrelevancy of the adhesive backing teachings to a tennis racquet retrieval problem, the need to hypothetically stretch the U.S. Open and Wimbledon to unplayable conditions to hypothesis the “hot and wet” playing conditions met the adhesive backing requirements of a wet drinking tube outlet all in light of teachings which teach the ineffectiveness of any hook component. With a striking similarity to these facts, In re *Fristich* USPQ1261 Federal Circuit 1992, held that:

“It is impermissible to use a claimed invention as an instruction manual or a template to piece together teachings of a prior art so that the claimed invention is rendered obvious and unpatentable.”

As to the applications of the *Urwin* patent, the *Smerdon* patent, the *Melbye et al* patent, and the *Feldi* patent in the 35 USC 103(a) rejections of record, the Board’s attention is also courteously directed to the decision *Ex Parte McKay* 147USPQ220(1965) which the United States Patent Office Board of Appeals held:

“Claims are not rejected for obviousness merely because the various portions of applicant’s concepts are found amongst the references since the references do not suggest the applicant’s arrangement of elements, absent applicant’s disclosure; specific element of one reference has pertinency to element to the remaining references only after applicant’s disclosure, not that the prior art made the relationship obvious.”

There exists a long line of cases which hold that references or patents cannot be properly combined under 35USC103(a) if the omission of a required processing step or element from the cited patent would clearly contradict the patent teaching objective, or if the combined teachings

renders the patented device or patented method useless or inoperative for its intended function and purpose, or if the combined teachings destroy the essence of the patent teachings relied upon, then there exists no basis under 35USC103(a) for combining the patent teachings (e.g. see *Ex Parte Hartmann* 188 USPQ 366, *Ex Parte Weber* 154 USPQ 491, *Ex Parte Sternau* 155 USPC 733, etc.). The proposed combination renders *Feldi*, *Musslin*, *Smerdon* and *Urwin* inoperable for their intended function and purpose. If a patent states an element is essential to the operation of a process or a function of a device, a combination of references relying in part upon such patent teachings cannot dismiss such essential teachings as immaterial and then propose (under the guise of the combined teaching) an untaught device or method completely contradictory to what the patent teaches. These well established standards for combining references are well summarized in the *Ex Parte Sternau* holding which held that:

“References may not be combined since there is nothing in their disclosure that would teach the combination or reason for it; moreover, combination would destroy the apparatus of one reference for its invented purpose.”

You cannot apply either *Melbye*, *Feldi* or *Urwin* without destroying the essence of the teachings by removing essential operative elements with striking similarity to appellant’s rejected claims 1, 4, and 6-15, the Board of Appeals *In Ex parte Shepard et al* 188 USPQ, the Board rejected the Examiner’s position by holding:

“... such modification by substitution is untenable absent some direction... Further more, the resulting structure would render material element of the Goetz et al system useless... In short, there is neither support in the prior art for the claimed limitations nor suggestion to combine references.

Any reference combination based upon *Feldi*, *Melbye et al*, *Smerdon* or *Urwin* is necessarily in non-compliance with the guidelines of 2143.02 M.P.E.P. by its requirement that:

“If proposed modification would render the prior art invention being modified unsatisfactory for its untended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).”

By the same token, there exists a non-compliance with the 2143.03 M.P.E.P. guidelines (e.g. see MPEP 2100-99, Feb. 2000) and directive:

“that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).”

How can *Feldi* be used alone or a primary reference (both rejections) or combined with *Urwin* or combined with *Smerdon* without rendering these patents unfit for their intended purpose or inoperable.

The final rejection presupposes that amongst the vast number of paired hook and loop fastening systems (the genus), that the prior art would be drawn as a magnet towards the sole use of a one-of-a-kind hooked fastener component (the species) without its customary paired mating loop component for a use which as taught by the art it was not designed and consistently taught as ineffective (e.g. *Lamson*, *Feldi* and *Urwin*) with an unanticipated discovery in light of patent teachings extolling its ineffectiveness of an unknown tennis ball attachment unexpectedly possessing four to six fold efficacy in tenaciously engaging and lifting all tennis balls. The unique nylon monofilament was found to possess a uniquely different capability of resiliently penetrating the tennis ball nap engage the nap fibers with its unique characteristics (e.g. hook width, hook depth, hook height, monofilament size, and number of hooks per square inch) while also allowing the tennis ball to be retrieved without destroying the tennis ball cover or nap. An unknown feat which relies upon very specific and limited embodiments for its unexpected fulfillment.

The M.P.E.P. guidelines of Section 2143.02 requires that in order to modify or combine references for 35 USC 103(a) purposes, “there exists a need for a predictability of success and that evidence showing no reasonable expectation of success fully supports Appellant’s position that the claimed invention is unobvious, In re *Rinehart* 187 USPQ 143 (CCPA 1976)”. Under 35 USC 103, the rejections of appellant’s claims herein, both the “predictability of success” and appellant’s claims 1, 4, and 6-15 have “achieved more than a combination which any or all of the

prior art reference suggested, expressed or by reasonable expectation” In re Sernakez 702 F.2d 994 USPQ 1 (Fed. Cir. 1983).

There exists nothing of record as clearly acknowledged by *Feldi*, *Urwin*, *Musslin*, and *Smerdon* as substantiated by *Lamson* to reasonably predict any success in using the one-of-a-kind nylon monofilament hook component, to tangentially engage and disengage the nap of all major tennis ball brands or even more remotely the uniqueness and the unexpected superiority by which it accomplishes this most unexpected feat. There also exists a long line of cases which stand for the legal conclusion that even if the references were deemed to establish a prima facie case of obviousness, any such a prima facie case is overcome if there is of record a showing of unexpected results. This is succinctly pointed out in *Orfeo* and *Murphy* 9169 USPQ 487, which held that:

“even though the claimed invention involves the use of a known compound in a known process, it is still unobvious to one of ordinary skill in the art because of the new and unexplained results and effects achieved.”

With striking similarity to Appellant’s invention as it relates to *Musslin et al* and the other cited patents, it is also interesting to note that the Court of Customs and Patent Appeals in *Re Russell* 169 USPQ 426 (CCPA 1971) held that:

“Even though a part of Applicant’s range of proportions and ingredients are suggested by broad teachings of reference, if applicant can establish his relevantly narrow range yield unexpected superiority results as against broad references ranges as a whole, applicants will have established unobviousness of their claimed invention.”

Appellant’s rule 132 Affidavit of Record, as well as the tabulated exemplary results of Appellant’s specifications clearly indicate that the uniquely different tennis ball retrieving attachment as claimed (claims 1, 4, and 6-15) by the Appellant herein yields unexpected results. These unexpected results are further substantiated by a prior art which clearly teaches that Appellant’s claimed results cannot be achieved and cannot be accomplished in the manner as claimed and achieved by the Appellant herein. The prior art as reported as late as the *Lamson* Patent filing date supports the unexpectedness of Appellant’s claims 1, 4, and 6-15. If the results are more than would be expected, then the results would not be suggested by the art and therefore

are unobvious.

The Examiner's reliance upon the hook and loop fasteners of *Melbye, et al* to extend to the unique, one-of-a-kind preshrunken monofilament hook of a highly specific and narrowly defined characteristics and to show that VELCRO and SCOTCHMATE are functionally equivalent as hook-and-loop fasteners misses the whole point of the claimed invention. What relevancy does a paired hook and loop fastener system have to Applicant's claims? Applicant is not claiming a paired hook and loop fastener system combination of either VELCRO or SCOTCHMATE. It is meaningless within the context of either Appellant's claims or the meaning to the ordinary artisan that VELCRO and SCOTCHMATE are known as paired hook and loop fasteners or garment fasteners. The raw fact is that Appellant is not claiming a paired hook and loop fastener combination, but a unique and unknown tennis ball retrieving attachment

30. Yes, *Feldi* does disclose and use a paired hook and loop fastening system and uses this combination to allow either the paired hook or loop covered ball (not a tennis ball) to be picked up with the racquet having the other mating or paired hook or loop component for engaging onto the newly covered hook or loop covered ball. Both paired elements are required by *Feldi* (i.e. neither the hook nor loop alone) to allow for the engagement and lifting of a ball with the hook and loop combination. The hook will not work by itself, as clearly taught by *Feldi*. It is only when the paired hook and loop fasteners are used together will it work. *Feldi* clearly establishes that no equivalency may be established by the non-equivalency hook and loop fastener teachings of *Feldi* towards Appellant's monofilament hook which all by itself as opposed to all other non-working monofilaments imparts the unique ability to repeatedly tangentially engage and lift all major brands of tennis balls. *Feldi* clearly teaches the non-equivalency of all hook and loop fasteners from Appellant's claimed monofilament hook.

The obviousness conclusion that, "given *Melbye*'s teachings 1 Col, lines 15-18), the SCOTCHMATE is a known hook and loop fastening system, it would be obvious to substitute a SCOTCHMATE fastener for the VELCRO one", means precisely what is stated by *Feldi*, namely to use the paired hook and loop fastening system is its entirety, (i.e. both and no more) the paired

hook and loop fastening system. The Examiner wishes without any concrete or factual evidence to speculatively extend these explicit teachings beyond their intended meaning to include an un contemplated use by an undisclosed and unknown tennis ball retrieving attachment possessing astounding unexpected efficacy.

The application of the *Smerdon* patent against the appealed claims involves nothing more than a data base search for a patent disclosing a SCOTCHMATE SJ3526 and a hindsight reconstruction of the *Smerdon* patent teachings which is not only in discord with *Smerdon* but in discord with the remaining patent technology of the 35USC103(a) patent combination. *Smerdon* teaches the use of both the hook and loop combination to secure a plastic water tube outlet to a bicycle handlebar stem. *Smerdon* teaches that the loop fastener is adhered around the circumference of the end of the drinking tube with the loop ends overlapped slightly to ensure for a more peel resisted attachment (e.g. see Col 12, lines 3-8). The hook component which engages and secures the loop component and the end of the plastic drinking tube is attached to the handlebar stem. *Smerdon*'s teachings that "the beverage tube is secured to the handlebar stem by hook and loop fastening means" reveals *Smerdon* neither contemplated using only the hook component nor any concern of the hook size or character or a wool nap.

The Office Action without factual support assumes that there exists no difference in the adhesion of a hook and loop fastener to a plastic water tubing outlet or a bicycle handlebar stem (typically of chrome) as taught by *Smerdon* in contrast to a shoulder of tennis racquet (typically of graphite or composite structure). The Office Action further falsely assumed that the "wet and warm conditions" at the end of the plastic watering tube of *Smerdon* (e.g. see Col 12, lines 1-29) would somehow prompt the ordinary artisan to conjure up a most wild imaginative thought that the U.S. Open and Wimbledon "are outdoor events that are played in wet and warm conditions", and the presumed "wet and warm conditions" of the U.S. Open and Wimbledon may be ipso facto be equated to the "wet and warm conditions" of the *Smerdon* loop fastener backing. This rationale is purely speculative and involves a distortion of the fact that neither the U.S. Open or Wimbledon are played in wet (i.e. rain) conditions since those matches are canceled in rain for

safety reasons.

Even if one were to follow the strained and speculative rationale of how the *Smerdon* patent has been applied against appellant's claims, how would the *Smerdon* patent teachings be applied when combined with the remaining cited patents? *Urwin* and *Feldi* (as well as *Lamson* and all other teachings) teach the ineffectiveness of hook material for use to tangentially engage and retrieve all major brands of tennis balls from the tennis court. *Smerdon* teaches the need to use both the hook and loop fastener combination which renders it more logical to apply the combined hook and loop fastener combination of *Feldi* to *Smerdon*. Why in light of clear teachings saying it cannot be done, what teachings, what suggestions, what motivation, what reasonable prediction of success, other than appellant's own teachings would suggest using only, amongst many, appellant's highly specific and unique claimed hook material. The subsequently issued *Lamson* patent uses both the hook and loop fastener combination (clearly states that hook alone will not work) with the adhesive backing serving to engage and retrieve grounded tennis balls.

There exists no reasonable expectation from the cited art teachings to remotely anticipate that a one-of-a-kind pre-shrunk nylon monofilament hooked material could effectively tangentially engage and disengage all major brands of tennis balls or even more remotely, the unexpected efficacy whereby the claimed combination accomplishes this totally unexpected feat. There exists no inductive rationale for combining the prior art references to lead one to appellant's unobvious invention. Only via hindsight reconstruction of the prior art strictly in view of appellant's teachings does it become possible to remotely phantom therefrom the unobviousness of appellant's claimed invention.

Appellant throughout her specification has expressly stressed the uniqueness of her own ball retrieving attachment, how it is patentably distinguishable from all other possibilities (e.g. see page 5, line 1 through page 6, line 4; page 9 line 1 through page 10, line 4; page 11, etc.) and how it yields unexpectedly superior ball retrieving results over all other hooked materials (e.g. see Tables 1-3 and the test results of one reported on pages 15 and 16.) Absent Appellant's own

teachings, there exists no plausible reason or motivation to direct the ordinary artisan towards the unique claimed embodiments (e.g. the isolation of a unique hook from loop, use of it in conjunction with an alien substance such as a tennis ball, and discovery of unexpected efficacy) of Appellant's invention. What is disclosed and claimed by Appellant is unknown. These factors by themselves should be sufficient to rebut any *prima facie* case of obviousness and most certainly when viewed within the context of the Appellant's unexpected results in the light of prior art teachings disclosing the futility of Appellant's unexpected discoveries.

The final rejection must necessarily rely upon a plurality of "factual falsehoods" which may not be properly drawn from the cited patents individually or collectively such as:

1) Required VELCRO tennis ball cover with a mating racquet attached hook and loop component to overcome VELCRO or any other hook material inherent unfitness may be deduced to mean using a VELCRO hook material for an unfit use as taught by *Feldi*.

2) Alternatively, an early vague and non-enabling patent of unlimited breadth with vague and indefinite terms such as "catching elements made of smooth layers full of retention and natural, artificial or even metallic fastening threads, meaning any effective material sticking on the ball clothe envelope" may be read in a vacuum and interpreted as providing reasonable motivation for the artisan to rely upon a tennis racquet equipped with the unfit and ineffective VELCRO of *Feldi* or *Melbye*.

3) The *Melbye* hook and loop ... "garment fasteners"... marketed under the VELCRO by Velcro, USA, and SCOTCHMATE by 3M Co. establishes:

- A) all hook and loop garment fasteners are equivalent to one another,
- B) garment fasteners are not a hook and loop fastener combination and therefore the hook component functions independent of its mating loop as a "garment fastener", VELCRO or SCOTCHMATE garment fastener combinations, all of which leads one to the conclusion that all hook components are equivalent.

4) The metallic VELCRO AIRTEMP stainless steel hooks of *Ross* (taught by *Feldi* as ineffective) are equivalent to all other VELCRO hooks including the mushroom type of

Melbye as well as all others manufactured from thermoplastic resins.

5) All SCOTCHMATE and VELCRO hook and loop fasteners as well as the hook fasteners by themselves are equivalent to one another and therefore appellant's claimed pre-shrunk nylon monofilament hook of a uniquely different structure may be deemed equivalent to:

- A) all metallic fastener hooks,
- B) all mushroom hooks,
- C) all poly(styrene-acrylonitrile) fastener hooks
- D) all poly(acryl nitrite-butadiene-styrene) fasteners hooks
- E) all polyethylene hooks and all poly-propylene hooks including the preferred copolymerized ethylene (4%) and propylene of *Melbye* notwithstanding *Melbye*'s clear teachings to the contrary.

6) Knowledgeable of the aforementioned the *Smerdon* loop "wet and warm" adhesive backing teachings for a wet watering tube outlet would direct an artisan as an expertly aimed arrow to target upon SCOTCHMATE SJ3526 for use upon tennis racquet to tangentially engage all tennis balls when all the meritorious patents of record clearly teaches that the unfitness of such a use.

7) Assumes that amongst all of the fastener combinations manufactured under the SCOTCHMATE trademark that SCOTCHMATE brand solely embraces the SCOTCHMATE SJ 3526 industrial fasteners at the exclusion of scores of other SCOTCHMATE fasteners.

8) The Wimbledon and the U.S. Open "are outdoor events that are played in wet and warm conditions" (actually cancelled with wet) which conditions equate to "wet and warm" watering tube outlet conditions which equates to the good wet adhesive backing of SCOTCHMATE SJ3526, which equates to teaching the placement of SJ3526 with the hooks outwardly upon a tennis racquet shoulder, which equates to eliminating the *Feldi* loop ball covering, which equates to the eliminating as to method claims 10-15 the required *Urwin* cup,

which equates to all garment fasteners being equivalent, which equates to all hook fasteners as “garment fasteners” being equivalent without the paired loop component, which equates all hook components irrespective of composition and structure to be equivalent, which equates to all hook fasteners as possessing appellant’s claimed unique characteristics with the inoperative or ineffective hook fasteners of the cited prior art teachings to the unique SJ3526 because appellant alone discovered its unexpected efficacy, equates the ineffective and inoperable prior art teachings to appellant’s unique and unexpected results, all of which “equates” reflect a reliance upon a host of unfounded speculative considerations for basing the 35USC103(a) rejections of record.

The final rejection fails (as in the parent application appeal) to apply the 35USC103(a) standards as commanded by the MPEP and the well-established case law in order to provide a fair and unbiased examination of appellant’s application. The 35USC103(a) final rejections clearly:

- 1) fail to recognize the actual factual background of the prior art as existed at the time of the effective filing date of appellant’s application;
- 2) fail to properly assess what each patent fairly teaches and suggest to the ordinary artisan;
- 3) fail to resist the hind-sighted temptation of isolating solitary and secluded partial elements or component parts of a cooperative combination from each patent relied upon under the 35USC103(a) rejections and then to apply each of the partial elements or subcomponent parts in a manner completely out of context in which the partial elements or subcomponent are found in the respective patent teachings (including the cooperative combination of components parts essential to a realistic appropriation of what each patent actually teaches to the artisan);

4) scans and interprets each patent as a glossary or as a computerized word term data search for any partial element or partial term having some sort of implied or assumed relationship to the claimed “nylon monofilament hooks” while totally disregarding the cooperative relationship or context within which such partial elements or terms are found and combined with other patents;

5) modifies or eliminates crucial components or essential cooperative component combinations taught by the respective cited patentees so as to destroy the basic and novel teachings of the patent or render the patent teachings inoperable for its intended purpose;

6) fails to appraise and accredit the patent teachings, as a whole, so that when each of the cited patentees teach or disclose the use of specially manufactured mating hook fastener and loop fastener combinations designed specifically to mate and fasten together that such teachings do not extend to the use of the hook fastener by itself but only apply to the specifically designed and tailor-made mating loop fastener as taught by each respective patentees;

7) fails to acknowledge the indisputable fact that the field of hook and loop fasteners encompasses a broad array of diverse fasteners, produced by a host of manufacturers involving a myriad of physical and chemical processing procedures which can dramatically change the function and character individually of the hook component and the loop component as well as the fastening interplay between the tailor made hook and loop fastener combination and their intended use as mating fastening partners;

8) fails to understand that when a cited patent teaches and suggest the conjoint use of fastener combination such as the *Smerdon* teachings of a combined use of SJ3526 SCTOCHMATE for fastening together a water tubing to a bicycle handle bar stem that *Smerdon* does not teach that only the hook fastening unit should be used by itself or upon an entirely

different substrate such as a tennis racquet;

9) fails to accept that the doctrine of equivalents does not apply to the one-of-a-kind nylon monofilament hook material precisely defined and claimed to possess undisputable and unexpectedly unique retrieving characteristics saliently distinctive from all other hooked materials which heretofore were notoriously recognized and acknowledged by all of the enabling patents of record as ineffective for use to tangentially retrieve all major brands of grounded tennis balls;

10) fails to acknowledge that when the patent literature clearly teaches the inability or inoperability of the hooked materials to effectively retrieve grounded tennis balls and the fact that appellant had discovered a unique and one-of-a-kind hooked material exhibiting unexpectedly superior efficacy which unique efficacy cannot be presumed to be suggested or expected, all of which represents the antithesis of obviousness under any 35USC103(a) standard;

11) fails to acknowledge that there exists no expectation upon a fair reading of the prior art, as a whole, to expect any hooked material amongst a host of hook fasteners (without an extrinsic aid or knowledge) would possess an outstanding ability upon tangential contact to not only retrieve all major tennis ball brands but an unexpected capacity to lift a four fold weight of the tennis ball;

12) fails to appreciate that if the art teaches the futility of well established and known finding (i.e. hooked materials are ineffective to tangentially engage and retrieve grounded tennis balls) and that if one discovers an unexpectedly superior efficacy by doing something the prior art consistently teaches cannot be done, there then exists, under any patentability standards, an unobvious invention;

13) fails to accurately recognize (legally and factually) that equivalency does not exist between alleged equivalent materials which are actually different in structure, composition and function.

14) applies indiscriminate mechanical standards to chemically and compositionally different cooperative components and sub component parts (e.g. specially chemically processed thermoplastic hook and loop fasteners) without acknowledging as clearly taught by the art of record that such compositional differences and processing variations negate any generalized conclusion that all hook and loop fasteners, irrespective of compositional make-up, are the actual and obvious equivalent to one another without giving due credit to the art of record, appellant's specification and documented attestations refuting any such unsubstantiated factual or legal conclusion.

15) fails to recognize spurious factual allegations or assumptions (challenged by appellant) which necessarily rely upon unwarranted extensions or reading into the individual patents undisclosed and untaught matters in an attempt to hindsightedly reconstruct each of the individual patent teachings so as to recreate the prior art teachings in a form so as to bear some sort of semblance towards the embodiments of appellant's claims 1, 4, and 6-15.

16) fails to recognize that amongst the host of commercially available hook and loop fasteners comprising scores of different types of hook and loop fasteners of various different materials of polymeric construction including a host of variations in VELCRO and SCOTCHMATE fasteners as well as a host of other globally and domestically available variations, there existed no appreciation of the unique and critical claimed prerequisites of a hooked material "derived from pre-shrunk nylon monofilaments so as impart sufficient rigidity to the individual hooks to permit the hooks to penetrate the pile N, hook the pile loops N and

retain sufficient rigidity to maintain the hooks **31** in a hooking position and lift the tennis ball **T**”, “pre-shrunk to provide dimensional stability and flatness so as to tenaciously retain the fibrous pile of the tennis ball and permit it to be lifted from the ground”, “ an average height higher in height that those which do not work in the invention”... (at least 1.7mm claims 1 and 7-8, an particularly effective at least 1.85mm, claims 4 and 9-15), “so as to permit deeper penetration of the hooks so as to more tenaciously retain fibrous pile in the hooks”, a wider than average width ... (at least 1.0mm of claims 1, 4, 6-8, 10-11), an average hook width ranging from about 1.1 mm to about 1.3 mm of claims 9 and 12-15) “to allow more space for pile fibers hooked by the hooks”, a deeper hook depth (at least 0.6mm of claims 1, 4, 6-8, 10 and 11, ranges from about 0.65mm to about 0.75mm of claims 9 and 12-15) to effect more deeper penetration into the pile and a greater quantum of fibrous pile to be potentially hooked and retrieved by the hook”, “average diameter of greater than 8.0 mil” (claims 1 and 7-11) “at least 8.25 mil” (claims 4, 6 and 12-15) to provide sufficient hook tenacity to retain hook **31** integrity and hold the tennis ball after hooking and during lifting” the cooperative interrelationship between the uniquely critical prerequisites of a pre-shrunk nylon monofilament such as the “height of the hook in combination with thicker diameter appropriately allows the hook to more deeply penetrate ... and more effectively hook” the pile **N**, the wider hook dimension in cooperative combination with hook height and diameter ... permits more individual fibers ... to be hooked and lifted”, “at least 250 hooks per square inch with the series being an arrangement of repetitive rows of the hooks” of claims 4, 6, “at least 300 hooks per square inch” of claim 9, “hooks being of a spiral configuration arranged in repetitive rows of at least 250 hooks per square inch (claims 10-15) only disclosed and discovered by appellant to provide a combination of a tennis racquet and tennis racquet possessing unexpected efficacy in tangentially engaging, lifting and retrieving a

grounded tennis ball which heretofore was collectively recognized by all of the learned and enabling patents of record as not being possible with “hooked materials (i.e. fabric hooks) of a polymeric construction, all of which is disclosed in appellant’s application and in the claimed substance of appealed claims 1, 4, and 6-15.

The entire thrust of the final rejection necessarily rests upon the common premise that all hooked materials or sub-element parts of a hook and loop combination are the actual and obvious equivalent to one another and therefore it may be legally be concluded that any hooked material will effectively serve to tangentially lift any tennis ball irrespective of what the patent teachings of record teach and therefore the unique claimed characteristics of applicant’s monofilament element is an immaterial claimed limitation. This is precisely what *Feldi*, *Musslin*, *Urwin*, *Melbye* and *Smerdon* teach. If the hook size and characteristics were of concern, why was it necessary for *Feldi* to solve the inability of the hooked material by themselves (e.g. the hooked material of the VELCRO hook and loop fastening system) and thereby cover the tennis ball with the modified VELCRO loop fastener so that any hook material would then effectively engage and lift the modified tennis ball? Why was it necessary for *Urwin* to create a cup to cup the tennis ball so that it could then engage and lift the tennis ball from a grounded position? When *Urwin* mentions hook type VELCRO members, why was it necessary to create a cup so that the ineffective VELCRO hook member could then encompass more of tennis ball surface and thereby lift a grounded tennis ball? Why does the cited *Musslin* patent (other than vague generalities and innuendos) fail to identify any workable “adhesive (sticking) hook”? Why do countless patents (e.g. *Feldi*, *Urwin*, *Lamson*, *Hodges* - Des 355,232) all issuing after *Musslin* (i.e. 1987) all conclude that a hooked material as a genus by itself without substantive auxiliary support are ineffective? Why in light of this consistent prior art discouragement should it ever be

possible for the appellant to discover her invention when all others failed? Why do all of the patentees within the last decade or so collectively teach that hooked materials (a genus) alone will not work to effectively tangentially engage and retrieve a grounded tennis ball and all teach the use of an auxiliary element which overcomes the inherent deficiency of the hooked materials by itself? Why is it necessary for the Examiner to rely upon “back door teachings” which require intuitive and highly speculative extrapolations of the prior art teachings in order to allegedly create an implied basis (e.g. unfounded) for predicting the 35USC103(a) rejections of record when in fact the clear teachings of all of the enabling patents explicitly teach that what applicant has done cannot be done? Why is an Examiner not accountable under the John Deere standard to fairly appraise what the prior art actually teaches instead of relying upon hunches and self serving premises which in fact contradicts the very art relied upon in marking the 35USC103(a) rejections? Why does it become necessary to rely upon adhesive backing of VELCRO and SCOTCHMATE hook and loop fasteners when in fact the adhesive backing bears no relationship to hook efficacy or the interaction efficacy of the claimed invention of tangentially contacting, lifting, and retrieving a grounded tennis ball?

The final rejection reaches the erroneous conclusion that VELCRO and SCOTCHMATE are art recognized equivalents and then erroneously concludes that all hooked fasteners are equivalent to one another. As the Board of Appeals concluded and as persistently stressed by applicant’s attorney through the prosecution, the VELCRO and SCOTCHMATE as referenced by *Melbye* are disclosed as “widely used as garment fasteners and hook-and-loop fasteners” which means a hook and loop combination of paired hook and loop fasteners will serve (jointly, not separately) as garment fasteners which merely defines a genus. The *Melbye* garment fastener teachings have nothing to do with a hook fastener by itself but only as the paired hook and loop

combination which are used as garment fasteners. *Melbye* clearly illustrates the factually fallacy of attempting to group all hoop and loop fasteners together as inherently being functionally equivalent to one another except to function as “garment fasteners” when used and fastened together as intended by the manufacture. The assignee of the *Melbye* patent is 3M, the manufacturer of such garment fasteners under the SCOTCHMATE or Tru Lock mark. The *Melbye* patent (assigned to 3M) does not even pertain to the claimed monofilament hooked fastener component of applicant’s invention but rather relates to a mushroom type hook fastener which under the rationale of the Office Action would also be considered to be art recognized equivalent even though *Melbye* teaches directly to the contrary. The reliance upon the non-enabling and art acknowledged discredited teachings of *Musslin* constitutes nothing more than hind-sighted reconstruction of the prior art solely because appellant’s own invention provides the sole enabling reason for doing so. The Office Action admits that none of the cited 103(a) patents disclose the recited one-of-a-kind monofilaments of the claimed hook material. There exists no rationale for selectively picking the good wet and hot adhesive backing qualities of *Smerdon* SJ3526 SCHOTCHMATE based upon an erroneous factual assumption (i.e. Wimbledon and U.S. Open events played in rain) and use the hook itself as a tennis ball retrieving attachment when none of the cited patents have any concern of hook size and character. Does the skilled artist engage in pure folly by doing something which in light of the patent teachings accomplishes nothing?

The factual background and legal conclusions of the present final rejection fall within the ambit of the In Re *Waymouth and Koury* 182 USPQ 290 (CPPA 1974) in which the *Waymouth et al* applicants had discovered that a certain specific ratio of halogen atoms to mercury atoms broadly disclosed by the prior art, but not specifically disclosed in any of the patents relied upon

in the final rejection were found by *Waymouth et al* to yield unexpectedly superior results.

Similar to the facts herein, none of the patents disclosed the critical aspects of the claimed *Waymouth et al* invention, and in fact led the art away from the invention as do the combination patents as cited by the Examiner herein. With particular relevancy herein, In re *Waymouth* and *Koury* held that:

“The Court must not read obviousness into an invention on the basis of appellant’s own statements.”

In chastising the Examiner and Board for considering appellant’s own findings as part of the prior art, coupled with prior art teachings leading away from appellant’s claimed invention, In re *Waymouth* observed that:

“Although Reiling’s range of possible ratios envelops the range claimed by appellants, we believe that the appellants’ graph in Figure 2 demonstrates the necessary unexpected results. Those results follow from the selection of Appellants’ critical range, which is narrower than the extremely broad inherently disclosed range of Reiling.”

The *Waymouth et al* decision illustrates a proper analysis of the claimed invention as a whole, including all of the claimed elements of the invention and the unexpected results of the invention, and a comparison of all of the claimed limitations of the claimed invention with the prior art teachings as a whole, and a weighing of all the evidence of record as a necessary prerequisite to a determination of any *prima facie* case of obviousness. The evidence and legal precedence sustaining the patentability of Appellant’s claims herein is clear by reason of a lack of those facts essential to justify any *prima facie* case of obviousness and the reliance upon a generalization that terms (paired garment fasteners and paired hook and loop fastener systems establish an equivalency for all hooked components) In re *Freid*, 165 USPQ 570(CCPA, 1970) correctly observed that:

“Any determination of obviousness must be based on facts and not on unsupported generalities.”

Any unsupported generalization such as the equating of all paired garment fasteners, paired hook and loop fastening systems, and mushroom type fasteners together with any and each unpaired

hook component by itself falls directly within this purview. It is also pointed out by *Melbye, et al* the hook and loop fastener systems are predicated upon chemically processed polymeric materials which by the very nature of their processing and chemical nature can lead to a vast array of different products possessing completely different properties and uses. As consistently held, chemical compositions are inherently unpredictable and inherency cannot be proven by the application of generalities such as the equivalency of all fastening hook and loop fastening systems as in the final rejection of record.

Within the same context of these decisions and their application to the controlling facts herein, attention is further directed to *In re Westlau*, 147USPQ391, (CCPA,1965), which held that:

“...since no one of the references suggests such a substitution, quite apart from the result which would be obtained thereby; such piecemeal reconstruction of prior art patents in light of applicant’s disclosure is contrary to 35 USC 103.” “... It is impermissible within framework of Section 103 to choose from any one reference only so much of it as will support a given position, to exclusion of other parts necessary to full appreciation of what reference fairly suggests to one of ordinary skill in the art.”

No reference herein suggests Appellant’s claimed tennis ball retrieving attachment or its use; and no reference remotely phantoms Appellant’s claimed unexpected result.

In the decision of *In re Pye and Peterson* 148 USPQ426(CCPA,1966), the Court of Customs and Patent Appeals was confronted with a similar problem of ascertaining whether or not a combination of references were sufficient to justify a *prima facie* case of obviousness. Similar to *Musslin*, one of the references relied upon in the *Pye et al* rejection was noted by the C.C.P.A. as being “extremely vague as to the exact structure of the polymers useful in their invention.” The Court concluded that:

“...it would be impossible to determine whether the polymers disclosed by *Fikentscher* are the same as those recited in the appeal claims. Moreover, that *Fikentscher* is completely silent as to the molecular weight of the polymers.”

In reversing the Board of Appeals, C.C.P.A. held that:

“While it might be possible to select certain statements from reference and mechanically combine them with other reference to arrive at applicants’ claimed combination, there is

no basis for making such a combination; neither reference is directed to problem solved by applicant's invention; only applicants' specification suggests any reason for combining teachings of prior art, but use of such suggestion is improper under 35 USC 103."

The final rejection alludes speculatively to the combined teachings as inherently embodying Appellant's claimed invention. However, inherency cannot be presumed, as the decision of *ex parte Cyba* 155 USPQ 756 clearly held that:

"a rejection based upon inherency may not be sustained unless inherency is certain."

There exists no plausible ground for assuming all paired hook and loop fastening systems are equivalent, let alone all hooked components. The failure to establish a *prima facie* case of obviousness by randomly selected passages falls within the same pitfalls observed in *Ex Parte Fleischmann* 157 USPQ 155 where the Board of Appeals correctly stated that:

"While it might be possible to select features from secondary references and mechanically combine them with primary reference to arrive at applicant's claimed combination, there is no basis for making such combination disclosed or suggested in references; only applicant's specification suggests any reasons for combining references; under 35 USC 103, that does not constitute a bar."

Appellant has invented a method for producing and using a novel tennis ball retrieving attachment (unknown) attached to a shoulder of a tennis racquet in the face of prior art, strongly suggesting that such a product and method will produce unacceptable results. This is the antithesis of obviousness. In *re Rosenberger et al*, such conclusions was reached in which held:

"Teachings of reference discourages research in field where applicants made their invention; thus, applicants invented a method for producing effective product in face of art strongly suggesting that such method would produce unacceptable results; this is antithesis of obviousness."

The M.P.E.P. 2144.05 III (2100-107) guidelines concur.

The astute decision of Judge Rich in the decision of *In re Civitello* 140 USP 10 (CCPA1964) appears also to be most applicable to an understanding of an insufficiency of the reference combination in establishing a *prima facie* case of obviousness herein. Similar to the *Civitello* facts, there existed no facts whatsoever in suggesting that the references used in the obviousness combination rejection disclosed a claimed element of appellant's invention. Judge

Rich correctly noted that:

“Since first reference fails to disclose feature of claim relied on, it would not suggest modifying second reference to contain that feature; Patent Office finds suggestion only after making a modification which is not suggested by anything other than applicant’s disclosure; this is hindsight reconstruction and does not establish obviousness.”

Similarly, the reliance upon Appellant’s disclosure to establish equivalency is flawed for several paramount reasons which have long been recognized by courts. Clearly, the equivalency argument rests upon matters only known to Appellant.

Appellant respectfully submits that the 35USC103(a) rejections of claims 1, 4, and 6-15 fails to establish a *prima facie* case of obviousness. The obviousness hinges upon untaught matters only known to Appellant. The 35 USC 103(a) rejections of record rely upon teachings only known to Appellant as a basis for combining isolated and discordant teachings from the cited patents to create a combination which contradicts those very patent teachings relied upon in making the combination and renders most of the patents unfit or inoperative for their intended purpose.¹ In making the combined patent teachings, it is necessary to modify the patent teachings of record to exclude elements which are taught as being essential so as to create modified patent teachings irreconcilable with what the patentees teach as essential to their respective operability.¹ Lastly, there exists no expectation from the prior art of a unique tennis ball retrieving attachment which not only could upon tangential contact repetitively lift not only all major tennis ball brands (when all others fail), but also engage a weighted tennis ball of a weight of more than four times and up to six times the tennis ball weight.⁷ These are truly unexpected results achieved in face of art teaching that tangential lifting is not feasible. Such unexpected results refute any possible *prima facie* case of obviousness.

The final rejections oversimplify the hook and loop fastener art as a genus coupled with a failure to recognize the highly specialized and uniquely distinctive claimed attributes of the claimed nylon monofilament hook component (a species) rests within a vast and complex chemical art field. At no time during the prosecution of this application or the appealed parent application has the prior art been carefully analyzed as to what the prior art teaches and what the

prior art has consistently stated cannot be done. There exists no concern in any of the cited patents as to hook size and character except as a genus hook and loop pair and certainly no recognition that a unique hook size and character may have a unique tennis ball pile efficacy. The prior art teachings have been read and interpreted in a vacuum.

A fair appraisal of what the cited patents of record teach to the ordinary artisan leads to an inescapable conclusion that hooked materials are unfit for use to tangentially engage and lift all grounded major brands of tennis balls from a tennis court. This is self evident by *Feldi* concluding that the hooked material is inherently ineffective and may only be used if the ball nap cover is changed to the mating loop material or vice versa, or a ball encompassing hooked material cup as taught by U.S. Patent Number 4,993,712 to *Urwin*, Des. 355, 232 to Hodges concave the butt ended receiving chamber suggested by U.S. Patent Number 4,210,327 to Schubert, appellant's patent specification, background of the invention, pages 1 to 3 and the background of the invention of U.S. Patent Number 6,652,397 B1 (subsequently issued by Examiner Chiu) which affirms appellant's position herein, all which clearly inform the art as to the futility in attempting to tangentially engage and lift all major brands of grounded tennis balls with the hook component of the hook and loop fastener combination. There exists literally hundreds of patents directed towards intricacies of producing a host of different types of hook and loop combinations possessing a host of different properties and functions, all of which forms a vast number of potentially different variations in hook and loop fastener combinations. As disclosed by *Melbye*, the thermal processing conditions, the stress or draw placed upon the material during its manufacture, whether "the hook strip can be made from special warps, or injection molding with or without vacuum, whether extruded or not, or made by weaving techniques or fabricated from a fabric having an orderly array of fabric loop followed by insertion rods to maintain upstanding position with platen or rollers used to apply heat and pressure under a host of potentially different processing and product variables, birefringence values, filament or stem characteristics including height, width depth, density of hooks, chemical composition, of the hook and loop fastener (e.g. see *Melbye* Col. 5, lines 1-6 referring to "polyesters such as

poly(ethylene terephthalate), polyamides such as nylon, poly(styrene-acrylonitrile), poly(acrylonitrile-butadiene-styrene), polyolefins such as polypropylene, and plasticized polyvinyl chloride, and a preferred random copolymer of polypropylene and polyethylene containing 4% polyethylene with a melt flow index of 7.0”, all of which countless variations in the manufacture of hook and loop fasteners as taught by *Melbye* et al. None-the-less, the final rejection summarily concludes that “VELCRO and SCHOTCHMATE were art recognized equivalent in their use as hook-and-loop fasteners in the racquet art” and “it would be obvious to substitute a SCOTCHMATE fastener in either the *Feldi* or *Musslin* racquet since *Melbye* teaches the equivalence of VELCRO and SCOTCHMATE fasteners and the selection of these known materials to form a fastener would be within the level of ordinary skill in the art”. The hook and loop fastener art is not a mundane mechanical art in which substitutions may be easily or randomly made but rather, the hook and loop fastener art rests upon complex chemicals produced under a host of manufacturing variables to produce a host of end products with a wide array of different properties and functions as taught by *Melbye*.

Appellant takes direct issue with the Examiner’s position that *Melbye* teaches the equivalence of all VELCRO & SCHOTCHMATE fasteners and that applicant’s claimed hook component is equivalent VELCRO, notwithstanding clear affidavit and exemplary proof in appellant’s specification that there exists no scientific basis to make such an unfounded and unsupported factual determination.

The prior art repeatedly acknowledges the ineffectiveness of hooked fasteners to tangentially engage and lift all of the brand name tennis balls. The art of record (including those cited in the Final Rejection) clearly reflects the unexpectedness of Appellant’s invention, as a whole, especially when viewed in light of prior art documents which teach and suggest that what the appellant has accomplished herein by her invention was unobtainable under the cited prior art teachings.

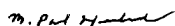
Appellant respectfully submits that each one of the patents cited in the 35USC103(a) rejections of record has been randomly gleaned for only those teachings which bear some sort of

semblance towards appellant's invention and combined with similarly gleaned elements from other patents even though the patent teachings, as the whole, teach precisely the opposite conclusion from what the Examiner construes each patent to teach. The dominate Board of Appeals and Interferences holding that the cited art is devoid "of any teaching or suggestion that hook size and characterization are of any concern in order to provide sufficient hook tenacity to deeply penetrate the pile of a tennis and consistently hold the ball after hooking and during lifting of the hooked bal from the ground and a failure to recognize that a claimed species or subgenus encompassed by broadly disclosed prior art genus is not sufficient by itself, to establish a *prima facie* case of obviousness" have not been overcome by the application of the *Smerdon* patent to the 35USC103(a) rejections of record.

In view of the aforementioned, the appellant respectfully requests the Board of Appeals and Interferences to reverse the final rejections of claims 1, 4, and 6-15 of record.

Dated this 5th day of January, 2006.

Respectfully submitted,



M. Paul Hendrickson
Attorney for appellant
Registration No. 24523

Post Office Box 508
Holmen, Wisconsin 54636-0508

Phone: 608-526-4422
Fax: 608-526-2711

APPENDIX
EXHIBIT A
APPEALED CLAIMS

What is claimed is:

1. A combination of a tennis racquet equipped with a ball retrieving attachment attached to a shoulder of the racquet in a ball retrieving position for engaging and lifting a grounded tennis ball upon tangential contact with said tennis ball, said attachment consisting essentially of a hooked fastener material adhesively attached to a convex outer perimeter portion of the shoulder so as to permit the hooked fastener material to make the tangential contact with said grounded tennis ball, with said hooked fastener material having a series of pre-shrunk nylon monofilament hooks for engaging and lifting the grounded tennis ball upon the tangential contact, with said hooks being characterized as having an average hook width of at least 1.00 mm, an average hook depth of at least 0.6 mm., an average monofilament diameter greater than 8.0 mil and an average hook height of at least 1.70 mm.
2. (cancelled)
3. (cancelled)
4. The combination according to claim 1 wherein the average height of the hooks is at least 1.85 mm, the average diameter is at least 8.25 mil and the attachment is further characterized as containing at least 250 hooks per square inch with the series being an arrangement of repetitive rows of the hooks.
5. (cancelled)
6. The combination according to claim 4 wherein the attachment comprises the hooks mounted to a rubber backing with a pressure sensitive adhesive for detachably mounting the attachment to the shoulder of the racquet.
7. The combination according to claim 1 wherein the attachment is applied as a continuous strip to the shoulder of the racquet at a tennis ball retrieving position.

8. The combination according to claim 7 wherein the attachment is positioned along an outer peripheral edge of the shoulder between an eight o'clock and four o'clock position.

9. The combination according to claim 6 wherein the attachment contains at least 300 hooks per square inch, the average height of the hooks is greater than about 1.90 mm, the average hook width ranges from about 1.1 mm to about 1.3 mm and the average hook depth ranges from about 0.65 mm to about 0.75 mm.

10. A method for retrieving a grounded tennis ball possessing a standardized felt pile nap with a tennis racquet equipped with a ball retrieving attachment attached along an outer peripheral edge of a shoulder of the tennis racquet with the hooked material positioned thereupon at a retrieving position for engaging and lifting a grounded tennis ball upon tangential contact therewith, said method consisting essentially of:

a) providing a strip of a hooked material having a pressure sensitive adhesive applied to a resilient backing member equipped with a plurality of pre-shrunken nylon monofilament hooks of an average monofilament diameter of at least 8.0 mil, an average hook height of at least 1.85 mm, an average hook width of at least 1.0 mm, and an average depth of at least 0.6mm, with the hooks being of a spiral configuration arranged in repetitive rows of at least 250 hooks per square inch;

b) applying the pressure sensitive strip to the outer peripheral edge of the shoulder of the tennis racquet at the retrieving position so as to permit the nylon monofilament hooks of the hooked material to make the tangential contact with the grounded tennis ball;

c) tangentially contacting and intermeshing the felt pile nap of the grounded tennis ball with the nylon monofilament hooks of said hooked material so as to engage and hook onto the felt pile nap of the grounded tennis ball with said nylon monofilament hooks;

d) lifting the hooked tennis ball engaged by the nylon monofilament hooks with the tennis racquet; and

e) retrieving the lifted tennis ball from the strip by unhooking said monofilament hooks from the felt pile nap.

11. The method according to claim 10 wherein the method includes the applying of the strip at a contacting position between a nine o'clock to a three o'clock position of the shoulder.

12. The method according to claim 10 wherein the average monofilament diameter is at least 8.25 mil, the average height is at least 1.90 mm, the average hook ranges from about 1.1 mm to about 1.3 mm, and the average hook depth ranges from about 0.65 mm to about 0.75 mm.

13. The method according to claim 12 wherein the applying includes the applying of at least one strip positioned along the peripheral edge located from a nine o'clock position to about a three o'clock position.

14. The method according to claim 13 wherein the strip covers the nine o'clock position and the three o'clock position.

15. The method according to claim 13 wherein a continuous strip is applied to the shoulder.

APPENDIX

EXHIBIT B

Pages B1-B10

Exemplary listing of hook and loop product and processing patents.

Patents - Few of many hundreds

U.S. Patent No.

2,717,437	3,009,235	3,241,881
3,313,511	3,027,566	3,338,291
2,933,797	2,976,914	3,328,081
3,485,529	3,279,008	3,147,527
3,154,837	3,196,490	3,136,026
3,546,754	3,550,223	3,550,837
3,562,044	3,562,770	3,577,607
3,586,060	3,594,863	3,594,865
3,595,059	3,629,032	3,665,584
3,673,301	3,695,976	3,708,382
3,715,415	3,732,604	3,735,468
3,781,398	3,801,245	3,943,981
4,024,003	3,405,430	3,527,001
3,913,183	4,041,549	4,169,303
4,290,174	4,615,084	4,617,214
3,594,873	5,349,991	5,515,583
6,202,264	3,031,730	3,138,841
3,147,528	3,138,841	3,147,528
3,192,589	3,261,069	3,607,995
3,718,725	3,770,359	3,785,012
3,808,301	3,808,648	3,900,652
4,454,183	4,628,709	

and many, many more.

U.S. Patent No. 4,910,062 - Exemplary teachings.

First Sentence "Background Art": The art is replete with sheet materials that can be cut into smaller pieces to form portions of fasteners, and methods for making such sheet materials. U.S. Pat. Nos. 2,933,797; 3,009,235; 3,136,026; 3,154,837; 3,577,067; 3,673,301; 3,943,981; and 4,024,003 provide illustrative examples.

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Results of Search in All Years db for:
hook AND "loop fastener": 5215 patents.
Hits 1 through 50 out of 5215

Exemplary of
remaining 5215 Hits























Next 50 Hits

DISCARDING

Refine Search by

hook AND "loop fastener"

PAT. NO.	Title
1 6,453,525	Double-bow shoe lace device
2 6,453,493	Covers for support pillows
3 6,453,475	Convertible visor/cap with a plurality of crown supports
4 6,453,204	Magnetic electrode for delivering energy to the body
5 6,451,405	Oil tarp assembly for heavy machinery
6 6,451,239	Process of making a hook fastener using radio frequency heating
7 6,450,944	Acceleration protective suit
8 6,450,895	Golf practice device with adjustable golf ball tee platform and adjustable leg stance platform
9 6,450,168	Infant sleeping blanket/garment for use with medical devices
10 6,450,131	Forward bending motion control harness
11 6,449,881	Detachable shoe wallet
12 6,449,777	Child-proof eyewear retainer strap assembly
13 6,449,770	Restraining garment device
14 6,448,742	Low profile battery pack with aircraft power provisions
15 6,447,362	Rotating musical remote control mobile device with detachable toys
16 6,447,353	Toddler/adult float jacket
17 6,447,165	Shipping container that can be stiffened
18 6,446,994	Bicycle fender system
19 6,446,852	Belt assembly for storage and inventory of tools
20 6,446,831	System for dispensing aprons
21 6,446,751	Apparatus and method for reducing noise levels
22 6,446,688	Carry bag with pouch insert and cover
23 6,446,577	Insulated cover for portable kennel
24 6,446,361	Transformable slipper toy
25 6,446,269	Concealed lower body garment support belt
26 6,443,986	Self-forming prosthetic device and method of making the same
27 6,443,805	Bra shelf and application thereof
28 6,443,787	Flying ski

- 29 [6,443,655](#)  [Flood barrier](#)
- 30 [6,443,617](#)  [Resealable sack or bag](#)
- 31 [6,443,525](#)  [Vehicle seat assembly and fastening device](#)
- 32 [6,443,499](#)  [Apparatus for pre-conditioned air hoses and a method of assembling pre-conditioned air](#)
- 33 [6,443,415](#)  [Computer monitor organizer assembly](#)
- 34 [6,443,407](#)  [Accessory tray for a tripod](#)
- 35 [6,443,335](#)  [Rapid comestible fluid dispensing apparatus and method employing a diffuser](#)
- 36 [6,443,297](#)  [Pulley lagging with hook and loop fastener attachment system](#)
- 37 [6,443,187](#)  [Aligning woven loop elements to form mounting sleeves](#)
- 38 [6,443,101](#)  [Pet apparel with leash](#)
- 39 [6,442,889](#)  [Insect and animal traps and holder for same](#)
- 40 [6,440,526](#)  [Non-slip pad](#)
- 41 [6,439,958](#)  [Breast saver comfort](#)
- 42 [6,439,733](#)  [Removable helmet light system](#)
- 43 [6,439,637](#)  [Golf cart cover](#)
- 44 [6,439,537](#)  [Forming mold with recess having snap-fit end seal](#)
- 45 [6,439,432](#)  [Personal safety device](#)
- 46 [6,439,314](#)  [Aqua boot for horses](#)
- 47 [6,439,221](#)  [Method and apparatus for providing a portable preassembled grill](#)
- 48 [6,439,167](#)  [Pet collar for use with pet containment system](#)
- 49 [6,439,152](#)  [Device for marking the path along the ground of a rolling wheel](#)
- 50 [6,438,900](#)  [Storage chamber](#)
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(4993 of 5215)

United States Patent
Yoshida

4,646,397
March 3, 1987

Surface-type fastener

Abstract

A surface-type fastener comprising a pair of fabric fastener strips, one fastener strip having on its one surface a number of *hook*-shaped engaging elements engageable with a number of loop-shaped engaging elements on one surface of the other fastener strip. One surface of each fastener strip has a first region in which the engaging elements are disposed, and a second region devoid of engaging elements. The other surface of the individual fastener strip has, in registry with the first region, an area covered with synthetic resin.

Inventors: Yoshida; Hiroshi (Kurobe, JP)
Assignee: Yoshida Kogyo K. K. (Tokyo, JP)
Appl. No.: 744255
Filed: June 13, 1985

Foreign Application Priority Data

Jun 18, 1984[JP]

59-90592[U]

Current U.S. Class:

24/442; 24/443; 24/448

Intern'l Class:

A44B 013/00

Field of Search:

24/442,443,444,445,446,447,448,451,452,426 2/DIG. 6 112/265.1,406

References Cited [Referenced By]**U.S. Patent Documents**

<u>3009235</u>	Nov., 1961	de Mestral	24/445.
<u>3136026</u>	Jun., 1964	de Mestral	24/445.
<u>3383738</u>	May., 1968	Fox et al.	2/DIG.
<u>3464094</u>	Sep., 1969	Mates	24/443.
<u>3525376</u>	Aug., 1970	Muhlhauser	24/442.
<u>3537108</u>	Nov., 1970	Daniels	2/DIG.
<u>3849840</u>	Nov., 1974	Yamada et al.	24/448.
<u>4089068</u>	May., 1978	Swallow	2/DIG.
<u>4139133</u>	Feb., 1979	Repka	2/DIG.
<u>4165555</u>	Aug., 1979	Boxer et al.	24/444.
<u>4212052</u>	Jul., 1980	Chambard	2/DIG.

Foreign Patent Documents

2153599	Aug., 1973	DE	24/442.
57-15684	Apr., 1982	JP.	
57-27289	Jun., 1982	JP.	

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United States Patent
Erb

4,615,084
October 7, 1986

Multiple *hook* fastener media and method and system for making

Abstract

Multiple *hook*-fastener media in which many protruding hooks are formed at relatively high speed from suitable bendable and settable plastic material which may be different from the substrate to which these pre-formed hooks are subsequently bonded. Many rows of hooks are formed simultaneously, each row from a strand, for example, a monofilament of longitudinally oriented polymeric material. The formed strands are "set" into their multiple *hook* row configuration, and then these pre-formed rows of hooks are simultaneously bonded to the substrate. Thus, an attractive substrate of any reasonable width, for example, of three inches, six inches, a foot or a yard, may be used. The production method and system enable the number of hooks per square inch, either longitudinally or laterally or both, to be adjusted while running. The shank of each *hook* includes two legs, and the production method and machine can be adjusted while running for making hooks with crossed legs, uncrossed legs or divergent legs for achieving varieties of configurations and characteristics, as desired for various applications. Advantageously, the production can be changed for making taller or shorter hooks and for making hooks with differently shaped arcuate ends by exchanging one pair of meshing (interdigitating) shaping belts for another. The substrate material may be woven or unwoven and may comprise multiple layers including metal or plastic layers or both. The substrate with mounted hooks can be slit longitudinally for producing many *hook*-fastener tapes at relatively fast overall lineal speed. Consequently, the *hook*-fastener media of this invention with their various sizes, shapes, widths and characteristics, fabricated by relatively low-cost, high-speed production hold promise of becoming widely available, widely used, commodity-type products which will find their way into myriads of applications of benefit to human beings in years to come.

Inventors: Erb; George H. (Cuttingsville, VT)
Assignee: Erblok Associates (Charlottesville, VA)
Appl. No.: 643001
Filed: August 21, 1984

Current U.S. Class: 24/442; 24/306; 156/66; 264/296; 428/93; 428/100; 428/369
Intern'l Class: A44B 018/00
Field of Search: 24/306,442,445 156/66 264/235,296 428/93,100,369

References Cited [Referenced By]

U.S. Patent Documents			
3147528	Sep., 1964	Erb.	
3196490	Jul., 1965	Erb.	
3527629	Sep., 1970	Wylde	428/93.
3546754	Dec., 1970	Erb.	
3550223	Dec., 1970	Erb.	
3550837	Dec., 1970	Erb	229/45.
3562044	Feb., 1971	Erb	156/155.
3562770	Feb., 1971	Erb.	
3586060	Jun., 1971	Erb	139/46.

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United States Patent
Higashinaka

4,920,617
May 1, 1990

Separable fastener

Abstract

Described herein is a male fastener strip having a multitude of hooking elements on one side of substrate cloth, which is characterized in that the individual hooking elements are spaced from adjacent hooking elements by X(mm) and Y(mm) in the transverse and longitudinal directions of the fastener strip, respectively, such that X is between 2.0 and 4.0 mm, inclusive and X/Y is in the range of 0.5 to 3.5.

Inventors: Higashinaka; Yukitoshi (Iruma, JP)
Assignee: Kuraray Company, Ltd. (Kurashiki, JP)
Appl. No.: 266329
Filed: November 1, 1988

Foreign Application Priority Data

Jul 30, 1986[JP]

61-181154

Current U.S. Class:

24/442; 24/446; 24/450

Intern'l Class:

A44B 018/00

Field of Search:

24/442,446,452,449,445,443,444

References Cited [Referenced By]**U.S. Patent Documents**

<u>3405430</u>	Oct., 1968	Sidelman	24/450.
<u>3527001</u>	Sep., 1970	Kleemeier et al.	24/446.
<u>3913183</u>	Oct., 1975	Brumlik	24/442.
<u>4041549</u>	Aug., 1977	Atkinson	24/450.
<u>4169303</u>	Oct., 1979	Lemelson	24/446.
<u>4290174</u>	Sep., 1981	Kalleberg	24/444.
<u>4615084</u>	Oct., 1986	Erb	24/442.
<u>4617214</u>	Oct., 1986	Billarant	24/444.

Foreign Patent Documents

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0037852	Oct., 1981	EP.	
2475564	Feb., 1987	EP	24/442.
1610318	Oct., 1970	DE.	
3244410	Oct., 1983	DE.	
1580822	May., 1968	FR.	

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United States Patent
Higashinaka, et al.

6,386,242
May 14, 2002

Hook fastener member to minimize damage to loops

Abstract

A flexible **hook** fastener member having a **hook** density of 80 to 200 per cm.sup.2 and causing little damage to cooperating loop fastening elements. The loops for forming **hook** fastening elements are produced by thin monofilaments having a fineness of 100 to 200 deniers. The monofilament for forming the **hook** fastening elements are in reverse phase relation to the adjacent ground warps with respect to the ground wefts.

Inventors: Higashinaka; Yukitoshi (Fukui-ken, JP); Itoh; Hiroshi (Osaka-fu, JP)
Assignee: Kuraray Co., Ltd. (Kurashiki, JP)
Appl. No.: 618844
Filed: July 18, 2000

Foreign Application Priority Data

Jul 30, 1999[JP]

11-216238

Current U.S. Class:

139/391; 24/445

Intern'l Class:

A44B 018/00

Field of Search:

24/445 139/384 B,391

References Cited [Referenced By]**U.S. Patent Documents**

3594873	Jul., 1971	Hockmeyer, Jr.	139/391.
5349991	Sep., 1994	Okawa et al.	139/391.
5515583	May., 1996	Higashinaka	24/446.
6202264	Mar., 2001	Ishihara	24/445.

Foreign Patent Documents

6-52521	Jul., 1994	JP.
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Primary Examiner: Falik; Andy**Attorney, Agent or Firm:** Oblon, Spivak, McClelland, Maier & Neustadt, P.C.**Claims**

What is claimed is:

1. A **hook** fastener member with damage to the to cooperating loop fastening elements minimized, comprising:

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(1581 of 5215)

United States Patent
Provost, et al.

5,953,797
September 21, 1999

Hook fasteners and methods of manufacture**Abstract**

A *hook* fastener member having rows of molded *hook*-shaped fastener elements that lie in planes aligned with the rows, with generally planar plate portions at the outermost ends of at least some of the fastener elements, the plate portions lying generally parallel to the base of the fastener member. The plate portions can enhance engagement of the *hook* fastener members with mating *loop fastener* members, particularly with low loft non-woven *loop fastener* members. A method of making fastener members is provided. Molten resin is extruded and applied to a molding roller, creating preforms. The outermost portions of at least some of the preforms are flattened, thereby forming generally plate shaped portions. Disposable absorbent garments advantageously incorporate the *hook* fastener members.

Inventors: Provost; George A. (Litchfield, NH); Condon; Mark J. (Melrose, MA); Leak; A. Todd (Neenah, WI); Roslansky; Apiromraj S. (Little Chute, WI); Serbiak; Paul J. (Appleton, WI)
 Assignee: Velcro Industries B.V. (Curacao, NL)
 Appl. No.: 731061
 Filed: October 9, 1996

Current U.S. Class: 24/452; 24/304; 24/442; 24/446
 Intern'l Class: A44B 018/00
 Field of Search: 24/452, 442, 445, 446, 448, 304

References Cited [Referenced By]

U.S. Patent Documents			
3031730	May., 1962	Morin	24/452.
3138841	Jun., 1964	Naimer	24/204.
3147528	Sep., 1964	Erb	24/204.
3192589	Jul., 1965	Pearson	24/204.
3261069	Jul., 1966	Mathison	24/204.
3607995	Sep., 1971	Chiba	264/15.
3718725	Feb., 1973	Hamano	264/163.
3770359	Nov., 1973	Hamano	425/305.
3785012	Jan., 1974	Billarant	24/204.
3808301	Apr., 1974	Pruden	24/80.
3808648	May., 1974	Billarant et al.	
3900652	Aug., 1975	Uraya et al.	428/92.
4169303	Oct., 1979	Lemelson	24/452.
4290174	Sep., 1981	Kalleberg	24/204.
4454183	Jun., 1984	Wollman	428/92.
4628709	Dec., 1986	Aeschbach et al.	

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United States Patent

D457,053

Akeno , et al.

May 14, 2002

Hook element piece for ***hook-and-loop fastener*****Claims**The ornamental design for a ***hook*** element piece for ***hook-and-loop fastener***, as shown and described.

Inventors: Akeno; Mitsuru (Kurobe, JP); Minato; Tsuyoshi (Toyama-ken, JP)

Assignee: YKK Corporation (Tokyo, JP)

Appl. No.: 101309

Filed: February 26, 1999

Foreign Application Priority Data

Sep 02, 1998[JP]

10-25157

Current U.S. Class:

D8/382

Intern'l Class:

0805/

Field of Search:

D8/382 24/452,442,448,444,453

References Cited [Referenced By]**U.S. Patent Documents**

5067210	Nov., 1991	Kayaki	24/442.
D367419	Feb., 1996	Murasaki	D8/382.
D374813	Oct., 1996	Akeno	D8/382.
D376533	Dec., 1996	Akeno	D8/382.

Primary Examiner: Baynham; Holly

Attorney, Agent or Firm: Hill & Simpson

DescriptionFIG. 1 is a front view of a ***hook*** element piece for a ***hook-and-loop fastener***.FIG. 2 is a top plan view of the ***hook*** element piece of FIG. 1.FIG. 3 is a right side view of the ***hook*** element piece of FIG. 1.FIG. 4 is a base view of the ***hook*** element piece of FIG. 1.

FIG. 5 is a cross-sectional view taken on line 5-5 of FIG. 2; and,

FIG. 6 is a fragmentary perspective view of the ***hook*** element piece of FIG. 1.

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United States Patent
Provost, et al.

4,654,246
March 31, 1987

Self-engaging separable fastener

Abstract

A self-engaging separable fastener is disclosed which comprises a base member of woven separable fastener material having at least two adjacent mating fastener sections. At least one section is defined by a plurality of loops upstanding from the base member, and the other section is defined by a plurality of hooks upstanding from the base member. The loops are formed of respective generally parallel rows of multifilament yarns interwoven into their respective base section so as to repeat the same loop direction and construction every predetermined number of picks and the hooks are cut from respective generally parallel rows of loops of monofilament yarns interwoven into their respective base section so as to repeat their loop direction and construction every predetermined number of picks, which latter number of picks is greater than the number of picks in which the direction of the multifilament loops is repeated. The density of the monofilament hooks is less than the density of the multifilament loops such that the sections of fastener material may be placed in face-to-face engagement by folding one section over the other and pressing the surfaces together and separated by peeling forces normal to the interfacial plane of engagement. Preferably the loops repeat themselves every four picks and the hooks repeat themselves every eight picks.

Inventors: Provost; George (Manchester, NH); Ouellette; Marcel C. (Bedford, NH)
Assignee: Actief, N.V. (Curacao, AN)
Appl. No.: 772591
Filed: September 5, 1985

Current U.S. Class: 428/88; 26/2R; 26/8C; 26/8R; 26/29R; 428/100
Intern'l Class: B32B 003/06
Field of Search: 428/88,92,100 139/2 28/214 26/2 R,8 R,8 C,29 R 156/72

References Cited [Referenced By]

U.S. Patent Documents			
4058853	Nov., 1977	Boxer et al.	428/100.
4165555	Aug., 1979	Boxer et al.	428/100.

Primary Examiner: McCamish; Marion C.
Attorney, Agent or Firm: Pennie & Edmonds

Claims

We claim:

1. A self-engaging separable fastener which comprises a base member of woven separable fastener material having at least two adjacent mating fastener sections, at least one section defined by a plurality of loop-like engaging elements upstanding from said base member, the other section defined by a plurality of *hook*-type engaging elements upstanding from said base member, said loop-like engaging elements being formed of respective generally parallel rows of loops of multifilament yarns interwoven into their respective base section so as to

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Search Results for hook loop fasteners (3 product headings found)

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Showing 1 - 3 of 3 product headings

- [Fasteners: Hook & Loop \(167 Companies\)](#)
- [Hook & Loop Fasteners \(37 Companies\)](#)
- [Fasteners: Hook & Loop, Conductive \(3 Companies\)](#)

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Showing 1 - 3 of 3 product headings

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Company Listings Provided by Thomas Register

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Company Name	Location	Description
<u>Velcro USA Inc.</u>	Manchester , NH	Hook & Loop Fastening Systems For Industrial Applications Where Separation & Rejoining Of Components Is Necessary, Or Where...
<u>Middleburg Thread & Sewing Supply</u>	Warminster , PA	Hook & Loop Fasteners, Sewing Quality, Pressure Sensitive, Heat Activated, Solvent Activated, Polyester, Display Pile....
<u>Fasnap Corp.</u>	Elkhart , IN	Wholesale Distributor Of Snap Fasteners, Turn & Directional Fasteners, Grommets, Panel Fasteners, Metal & Plastic Hardware,...
<u>Toleeto Fasteners International</u>	San Ysidro , CA	Reusable Hook & Loop Cable Ties, Wrist Bands & Custom Fabricated Straps For A Variety Of Applications. Ultrasonic Welding &...
<u>Loktite, Inc.</u>	Timonium , MD	Dist. 3M & Other Hook & Loop Fasteners. Plain Backed, Pressure Sensitive, Dual Lock & Solvent / Heat Activated. Tapes,...
<u>National Webbing Products Co.</u>	Garden City Park , NY	Complete Line Of Hook & Loop In All Widths & Colors. On Spools Or Cut Pieces, Hook & Loop Straps
<u>Levitt Industrial Textile Co.</u>	Hicksville , NY	Dist. Of Velcro® Brand Hook & Loop Tape, Coins & VELCLOTH™ Brand Display Fabric. Special Colors, Widths, Lengths, Cut..
<u>Gleicher Manufacturing Corp., A 3M Distributor</u>	Scotch Plains , NJ	Rotary & Flatbed Die Cutting, Laser Cutting, Clean Room Processing, Tapes, VHB®, Dual Lock®, Bumpons®, A 3M Dist.
<u>Bond Products Inc.</u>	Philadelphia , PA	Suppliers Of Narrow Fabrics, Including Woven Tapes, Hook & Loop Tape & Dots, Drawcord Braids, Webbing, Elastics, Tying...
<u>Bardsco</u>	St. Louis , MO	Reusable Hook & Loop Cable Ties, Wrist Bands & Custom Fabricated Straps For A Wide Variety Of Applications. Ultrasonic...
<u>Touchtape, Inc.</u>	St. Augustine , FL	Standard & PS Hook & Loop Tape & PS Dots Available. In-House Mfg. & Fabrication. Custom Orders
<u>Perfectex Plus LLC</u>	Huntington Beach , CA	Hook & Loop Fasteners. Sew-On Pressure-Sensitive Tapes. Heat & Solvent Activated Tapes. Fire-Retardant. Mil. Spec. Custom...
<u>Action Fabricators</u>	Grand Rapids , MI	Pressure Sensitive Adhesives, Tapes, Rubber Bumpers, Felt Feet & Pads. Die Cutting Of Various Materials. Specialize In...
<u>Speedtech International, Inc.</u>	Chicago , IL	Mfr. & Dist. Of Hook & Loop Fasteners. Stocking VELCRO®, SPEEDWRAP® & Other Brands
<u>WBC Industries, Inc.</u>	Westfield , NJ	Hook & Loop Fasteners
<u>Rip 'N Grip Industries, Inc.</u>	Palmdale , CA	Mfr. & Dist. Of Hook & Loop Fastening Tapes
<u>American Cord & Webbing Co., Inc.</u>	Woonsocket , RI	

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Alabama

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Product/Service

<u>Creative Textiles, Inc.</u>	Torrance , CA	Custom Fabrication To Specs. Sewing, Ultrasonic Sealing, Embroidery, Silk Screening, Die Cutting, Imprinting
<u>Industrial Tape & Supply Co.</u>	Marietta , GA	Complete Line Of Tape & Packaging Supplies Including 500 Varieties Of Pressure Sensitive Tapes, Tape Dispensers, Carton...
<u>Griff Paper & Film</u>	Fallsington , PA	Release Liners For The Pressure Sensitive Fastener Industry. Paper & Film Substrates. Printing Logos A Specialty
<u>T & W Converters, Inc.</u>	Glendale , CA	Tape Die-Cutting, Printing, Slitting, Rewinding & Laminating. In-House Printing Of Carton Sealing & Gummed Tape. Dist. Of...
<u>Adhesives & Tapes Industrial Supply</u>	Vista , CA	Adhesives, Sealants, Coatings, Encapsulants, Tapes & Application Equipment. Casting Resin, Acrylic, Anaerobic,...
<u>Granat Industries, Inc.</u>	Elk Grove Village , IL	Hook & Loop (Sewing Quality - Pressure Sensitive) All Widths In Stock. Thread, Webbing, Plastic & Metal Hardware, Rivets,...
<u>Hang-Ups Unlimited, Div. of Magna-Pole Products, Inc.</u>	Santa Monica , CA	Mfrs. Of Adhesive, Magnetic & Suction Cup Hooks & Mechanical Fasteners For Hanging Promotional & Permanent Indoor Displays,...
<u>FASTENation, Inc.</u>	Passaic , NJ	Dist. & Fabricator Of Hook & Loop Fasteners, 3M Dual Lock

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Company Name	Location	Description
Can-Do National Tape	Nashville, TN	Pressure Sensitive Tapes For Every Application; Complete Line Of Converting Capabilities & Specialty Tapes; All Widths,...
WCL Company	City Of Industry, CA	Cable Ties & Clamps; Cuff Restraints; T-Clamps; Nail Clips; Hose Clamps; Wire Ducting; Patch Panels
MSC Industrial Supply Co.	Melville, NY	Supplier Of 450,000 Products From 2,500 Mfrs.: Cutting / Machine / Hand / Power Tools, MRO Supplies, Abrasives, Fasteners,...
TekSupply	South Windsor, CT	Wholesale Mfr. & Dist. Serving The Agricultural, Building, Repair & Maintenance Industries. Specializing In ClearSpan™...
Meyers, A., & Sons Corp.	New York, NY	Hook & Loop, Straps, Cut Pieces. Sew On & Pressure Sensitive. Fibre Optic Bundle Straps
World Fasteners, Inc.	Hampstead, MD	Over 195 Million Fasteners In Stock In All Materials, Sizes & Shapes. Military, Commercial, Fed-Milspec, AN-MS-NAS....
Seton Identification Products	Branford, CT	Hook & Loop
Linal, Inc.	Bristol, CT	Supplier & Mfr. Of Metal Snap Hooks & Snap Closures For Pet Leads, Tents, Marine, Military Specification & A Wide Range Of...
Nielsen / Sessions	Hartford, CT	Global Mfr. Of Latches, Hinges, Handles, Locks & Hardware. Standard & Custom Engineered Applications To Industrial,...
Clements Industries Inc.	South Hackensack, NJ	Mfrs. Of Pressure Sensitive Tape & Label Dispensers, Bag Sealers, Cable Ties, Packaging Machinery, Twist Tie Machines &...
Dienetics, Inc.	Grand Rapids, MI	Die Cut, Stamped & Lasercut Plastic, Rubber, Foam, Cork, Fibre & Adhesive Backed Non-Metallic Materials. Mfr. Of Laser Steel...
Pacific States Felt & Mfg. Co., Inc.	Hayward, CA	Cut To Specs.
HellermannTyton, A Spirent Co.	Milwaukee, WI	Cable Management Products Including Cable Ties, Clips, Clamps & Other Fasteners
Covert Co., Inc.	Baltimore, MD	Mfg. Adhesive Machinery For Bonding Hook & Loop Material To Plastics & Metals
Gem Office Products Co., LLC	Jacksonville, FL	Paper Clips, Brass & Steel Paper Fasteners, Metal Meat Skewers, Pin Tickets, Thumb Tacks, Pins, Package Handles, Specialty...
HyTech Spring And Machine	Plainwell, MI	Flat Springs, Retainers, Snap Rings, Clamps, Rings, Wire Forms & Any Type Of Helical Springs With Size .002" & Up. Certified...
Converters Inc.	Huntingdon Valley, PA	Specializing In Custom Slitting, Die Cutting & Laminating Of Pressure Sensitive Tapes
Atlantic Gasket Corp.	Philadelphia, PA	Mfr. Of Gaskets, Die-Cut Parts & Fabrications From A Wide Range Of Non-Metallic Materials, Including

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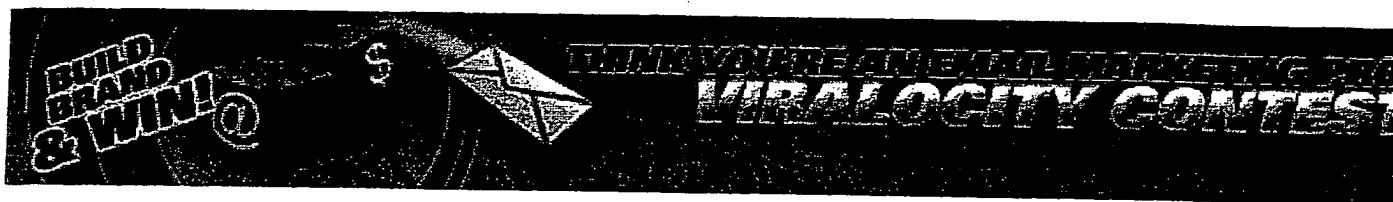
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Product/Service

<u>Ace Commercial & Industrial Supply</u>	Oak Brook, IL	Rubber, Cork,... Hand Tools, Power / Welding Tools, Abrasives, Safety & Security, Building Hardware, Fasteners, Material Handling & Storage,...
<u>Precision Plastics</u>	Beltsville, MD	Mfr. Of Custom Plastic & Wood, Metal Products & Fabrications Including Vacuum Forming, Thermoforming, Covers, Domes, &...
<u>Advanced Fabricating Technology, Inc.</u>	Grand Rapids, MI	Die Cutting, Fabricating, Stamping, Laminating, Packaging & Screen Printing Of Plastics, Rubber, Adhesives, Foam & Fibre....
<u>Enco Manufacturing Co.</u>	Farmingdale, NY	Metaworking & Woodworking Tools, Machines & Supplies
<u>Diamond Fasteners, Inc.</u>	Farmingdale, NY	Distribute Fasteners & Electronic Hardware. In Stock Military Specs. (AN-MS-NAS), Aerospace / Aircraft Fasteners, Standard /...
<u>Able National Corp.</u>	Brooklyn, NY	Turnkey Contract Mfr. Of All Die Cut Products; Magnets, Filters, Gaskets, Washers, Advertising Specialties; Design, Printing
<u>Alliance</u>	Hot Springs, AR	Designer & Mfr. Of All Varieties Of Rubber Bands For All Applications Including Office, Home, Industry & Produce. Packaging,...

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Company Name	Location	Description
Greene Rubber Co., Inc.	Woburn, MA	Dist. & Fabricators Of Hook & Loop Materials. Strips Or Die Cut Parts To Specification. Dies Made On Premises
Leonard Industrial Supply	Westbury, NY	Complete Line: Hand Tools, Fasteners, 3M Abrasives, Adhesives, Chucks, Cutting Tools (Drills, End Mills, Reamers),...
Century Marketing Corp.	Bowling Green, OH	Plastic Hook, Tachers, Self Fastening. Hang Tags & Garment Bags Also Available
Deccofelt Corporation	Glendora, CA	Converters Of A Wide Range Of Materials Into Adhesive Coated Products. Complete Die-Cutting & Slitting Facilities
Reid Tool Supply Co.	Muskegon, MI	35,000 Items In Stock, No Minimum Order
Robbins Lightning, Inc.	Maryville, MO	Mfrs. Of A Complete Line Of Lightning Protection & Static Grounding Materials Which Comply With The Requirements Of Codes...
A+ Products, Inc	Brooklyn, NY	Stampings, Die Casted, Wire Forms, Split Keyrings, O & D Rings, Suspender, Luggage & Plastic Hardware, Zippers
Diversified Foam Products Inc.	Pennsauken, NJ	Custom Foam Fabrication, Precision Slitting, High-Speed Die Cutting, Flame Lamination, Hot Wire & Kiss Cutting. Specializing...
Rapid Rivet & Fastener Corp.	Farmingdale, NY	Master Dist. Of All Types Of Rivets, AN, MS, Commercial. Solid Semi-Tubular Blind, Drive Rivets & Rivet Nuts
Hudson Fasteners, Inc.	Bay Shore, NY	Full Line Mfr., Dist. Fasteners: Screws, Nuts, Bolts, Washers, Hardware, Fastener Assortment Kits. All Grades, Materials &...
Fastening Products Inc.	Laguna Hills, CA	Mfr., Distributor, Importer, & Wholesaler Of Commercial Grade Fasteners For Sale To OEM's. Standard Items Available...
Wayne Bolt & Nut Co.	Detroit, MI	Fasteners; Bolts, Screws, Nuts, Pins, Dowels, Spacers, Fittings. Standards Or Specials From Blue Prints. Ferrous Or Non...
FFr / Fasteners For Retail	Cleveland, OH	Merchandising Systems & Accessories Including Sign Holders, Shelf Management Systems, Ceiling Display Products, Product...
Allied Manufacturers	Corona, CA	Supplier Of Machined Components & Products. Products To Every Industry; From Designers Of Skates To Builders Of Jumbo Jets
P & H Metal Products Corp.	Valencia, CA	Mfr. Of More Than 1500 Luggage / Custom Hardware; Buckles, Hooks, Snaps, Rivets, Rings, Slides, Tie-Downs
Cable Markers Co., Inc.	Lake Forest, CA	Identification Products, Wire Markers, Computer Printable Systems, Labels, Tags, Heat Shrink Sleeving, Serialization, Bar...

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Product/Service

<u>Ampex Metal Products Co.</u>	Cleveland, OH	All Materials & Industries. Four-Slide, Punch Press, Secondary Operations. CAD, SPC. Complete Tool & Die Facilities
<u>Brand Preference Development Co.</u>	St. Louis, MO	Hinges, Hardware, Locks, Latches & Foam Tape, Plastic & Metal Trim
<u>Astrup</u>	Cleveland, OH	Dists. Of Hardware For Awning, Tent & Marine Applications. Also Awning, Sign, Marine, Tarp & Tent Fabrics As Well As...
<u>Clip Strip Corp.</u>	Hackensack, NJ	Mfrs. Of Display Fixtures, Clip Strips, Holders For: Price Channels, Signs, Banners, Cards, Labels
<u>Advanced Cable Ties, Inc.</u>	Gardner, MA	Mfg. & Specializing In Nylon, Stainless Steel, & Hook & Loop Cable Ties, Cable Tie Accessories, Cable Clamps, Cable Wraps,...
<u>Premier Fasteners, Inc.</u>	Farmingdale, NY	Stocking Dist. Of Fasteners; Nuts, Bolts, Rivets, Screws, Washers, & Hardware For Commercial, Industrial & Aerospace Markets
<u>Associated Bag Co.</u>	Milwaukee, WI	Reusable Ties With / Without Buckle In Black. Self-Adhesive Velcro® Coins. Packaging & Shipping Supplies
<u>Allan Zipper Mfg. Corp.</u>	Brooklyn, NY	Nylon Molded & Metal Zippers, Hook & Loop Fasteners, Separators, Closures. Assembler / Distributor
<u>3M Co. / Corp. Mktg. & Public Affai.</u>	St. Paul, MN	Serving Several Markets Including: Automotive, Communication Arts, Construction & Maintenance, Consumer, Electronics /...

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Company Name	Location	Description
Plitek, LLC	Des Plaines, IL	Specialists In Custom Die Cutting, Slitting, Laminating, Coating, Spooling, Plastic Extrusion & Fabrication Of Precision...
Moore, Howard J., Co., Inc.	Huntington Station, NY	Plastic & Insulating Parts & Material; Rubber Gaskets, Die Cutting, Stamping, Screw Machine Parts
Secon Rubber & Plastics, Inc.	Red Bud, IL	3M Converter, Foam Tapes, Gaskets, Pressure Sensitive Adhesives, Diecutting, Laminating, Slitting, VHB Tapes, Converter &...
New Brunswick Plating, Inc.	New Brunswick, NJ	Plating & Surface Finishing Of Complex Components In The Electronic, Medical & Electrical Industries. Plate On A Large...
Crest Lock Co., Inc.	Brooklyn, NY	Mfr. / Designer Of Specialty Hardware For Transit & Instrument Cases & Trunks, Cabinets, Luggage. Standard & Custom Handles,...
Wirewright Manufacturing	Camarillo, CA	All Types Of Commercial, Industrial, Military Buckles. Products Include D-Rings, Medical Buckles, Plastic Buckles, Snap...
Harper Aerospace	Corona, CA	Fasteners Found In Satellites , Nuclear Applications, Radar Equipment, Turbine Engines & High-Pressure Pumps
Audion Automation, Ltd.	Addison, TX	Mfr. Of Flexible Packaging Systems & Packaging Machinery: Shrink Packaging, Bag Packaging & Skin Packaging. Products...
Breeze Eastern	Union, NJ	Rescue Hoists, Cargo Winches & Hook / Tie-Down Systems For Helicopters, Other Aircraft & Ships
Textol Systems, Inc.	Carlstadt, NJ	Distributor & Fabricator Of Hook & Loop Products
Delafield Fluid Technologies	Duarte, CA	Supplier Industrial Hoses, Including Hose Accessories & Fittings
Vicar International	Union, NJ	Mfrs. Of Snap Fasteners, One Way Fasteners, Baby Snaps, Curtain Fasteners, Turnbuckles, 100% Stainless Steel Snap Fasteners...
Tape Specialists Of Georgia Inc.	Americus, GA	Supplier & Converter Of Pressure Sensitive Tapes, Foams, Diecuts / Extrusions & Packaging Materials. Representing The...
Sutherland Felt Co.	Troy, MI	Mfr., Die Cutting, & Fabricating Felt, Cork, Rubber, Foam, Leather, Hi-Temp materials. Fast Turnaround, Short Runs Welcome
Tapeier Tape Machine Corp.	Ashland, MA	Automatic Or Semi-Automatic High-Speed Tape Applicators For All Types Of Pressure Sensitive Tape With Or Without Liner,...
Ribbon Webbing Corp.	Chicago, IL	Mfrs. Of Polypropylene, Nylon & Polyester Webbing, Also Hook & Loop, Gros Grain. Webbing For All Purposes, In All Colors &...
Warren Bolt & Screw Div., Warren	Detroit, MI	Mfrs. Dowel & Taper Pins, Woodruff Keys, Acorn &

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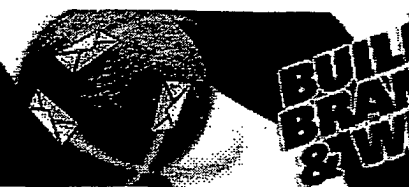
<u>Screw Works</u>		Weld Nuts, Weld Screws, Long Socket Caps, Specialty Screw
<u>Syst-A-Matic Tool & Design</u>	Meadville, PA	Mfrs. Of Taplicator- Tape Application System: Feeds, Cuts, & Applies Pressure Sensitive Tape; Scrap-Eliminating Process...
<u>Richco, Inc.</u>	Chicago, IL	Plastic Fasteners, Circuit Board Hardware, Wire Routing Products, Cable Ties, Clips & Clamps, Fiber Optic &...
<u>Integrity Fasteners, Inc.</u>	Orange, CA	Dist. Fasteners, AN-MS-NAS, BAC Hardware, Inserts, Nuts, Bolts, Screws, Washers, Fittings, Connectors. Metric & Standards,...
<u>Plasti-Clip Corporation</u>	Milford, NH	Price Channel Sign Holders, Clips, Accessories
<u>D.J. Associates, Inc.</u>	Fort Smith, AR	Miscellaneous Hardware, Webbing & Tapes, Small Quantity Specialists
<u>Barjan Manufacturing Ltd.</u>	Farmingdale, NY	Hook & Loop Fastening Systems For Drapery Systems, Secure Guard™ Systems
<u>American Trade Group, Inc., Left Hand Bolt & Nut Div.</u>	Detroit, MI	Large Inventory Of Finished Left-Hand Hex Head Caps, Socket Caps & Hex Nuts
<u>MULTI TRIM</u>	New York, NY	Mfrs. & Dist. Of Full Line Of Industrial Sewing & Trimming Supplies In Any Colors & Styles

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Company Name	Location	Description
Manderscheid Equipment & Supply	Chicago, IL	3M Hook & Loop Available
Jontay	Waycross, GA	Dist. Of Webbing, Hardware, Buckles, & Notions. Plastic & Metal Buckles, Hook & Loop Elastic.
Pam Narrow Fabrics Corp.	Freeport, NY	
Suncor Stainless, Inc.	Pembroke, MA	
Andfel Corp.	Bloomington, IN	Hand Held Attaching Tool Systems To Replace Thread, Metals STaples & Pins For Fabric, Drapery & Upholstery Applications....
Mil-Spec Fasteners Corp.	Hampstead, MD	Over 200 Million Fasteners In Stock, All Sizes / Materials, Hard-To-Find Items Military Specifications, MS-NAS-NASM,....
Ronstan International Inc.	Largo, FL	Mfr. Stainless Steel Narrow, Ferrule Eye & Flared Top Eye Straps. Also, Pulleys Sheaves, Rope Cleats, Stainless Steel..
Norse, Inc.	Torrington, CT	Latches-Spring Loaded: Surface Mounted Externally / Internally-Mortised, Sealable, Ganged & Remotely Operated
Triforce Fasteners	Upland, CA	Complete Line Of Fasteners: Nuts, Bolts, Screws, Rivets, Retainers For Various Applications Covering Mil-Spec, Aerospace,....
Missouri Threaded Rod, Inc.	St. Louis, MO	Mfr. Of Threaded Rods Studs, Bolts, Nuts, Washers, Screws In Alloys & Stainless Steel
Stewart Handling Systems	Chino, CA	
Quintana Industrial Supply, Inc.	Lawrence, MA	
U.S. Slide Fastener Corp.	Boston, MA	
Peters-De Laet, Inc.	South San Francisco, CA	
ATCO	Houston, TX	
Scovill Fasteners, Inc. (DOT, PCI)	Clarksville, GA	Fasteners
Kornar / Stitchcraft	Elk Grove Village, IL	
Argent Automotive Systems	Novi, MI	
Bisco Int'l. Inc.	Hillside, IL	Fasteners For Temporary & Permanent Jobs
Aplix, Inc.	Charlotte, NC	
Emar Separator Co., Inc.	Long Island City, NY	Mfrs. Of Metal, Plastic, Nylon Zippers. Separators, Slide Fasteners Of All Sizes & Types
Lockfast, Inc.	Cincinnati, OH	
Lockfast-West	North Las Vegas, NV	
CustomFab Inc.	Huntington Beach, CA	
Royalox International, Inc.	Phillipsburg, NJ	

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Company Name	Location	Description
Versa-Flex Inc.	Cleveland, OH	Contract Sewing, Design, Prototypes, Large & Small Runs
Schwartz, Gerald, Inc.	Tucker, GA	
RAK Foam	Cedar Knolls, NJ	
Creative Packaging, Inc.	Tulsa, OK	
Fare's Industrial Tools & Supply	Corona, CA	
Magic Tape Corp. DBA Inloc	Passaic, NJ	
Mountainview Specialties Inc.	Perkasie, PA	
Vanguard Performance Plastics	Elkhart, IN	Single & Double Coated Foam Tapes
GB Vision	Milwaukee, WI	
S.T. Robb Co.	Edina, MN	Dist. Of Nuts, Bolts, & Screws. All Sizes
Ozland Enterprises, Inc.	Vicksburg, MI	Hook & Loop Straps & Fastening Systems: Variety Of Applications
YKK (U.S.A.) Inc.	Lyndhurst, NJ	
Popco Inc.	Minnetonka, MN	Brand Adhesive Backed Hook & Loop
Mikron America, Inc.	Paterson, NJ	Grommets, Caps, All Button Fastening & Covering Applications
Ooltewah Mfg., Inc.	Ooltewah, TN	Heat Sealing, Ultrasonic Sealing, Hook & Loop Cutting, Mating, Sewing & Bonding. Strapping, Hook & Loop, Patented...
Cansew, Inc.	Montreal, QC	
Valley Enterprises, Inc.	Udly, MI	
Technifast Industries, Inc.	Carol Stream, IL	Custom Cold-Headed Products, Specialty Fasteners, Screws, Special Items
Iver Display	Bangor, PA	
Progressive Plating Technology, Inc.	Bridgeport, CT	ISO 9002 Certified. Automated Barrel Electroplating Certifying To Specs
Vers-A-Flect	Wilmot, NH	2", 1-1/2", 1", 5/8", Black & Navy Blue
Automatic Plating	Bridgeport, CT	
King, John, Inc.	City of Commerce, CA	
Fastening Products Of Lancaster	Lancaster, PA	Mfr. Distributor Of A Variety Of Fasteners. Standard, Metric, Military, Aerospace. All Alloys. Large Inventory. On Premise...
AccuMED Technologies, Inc.	Buffalo, NY	

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Select companies in state/province:

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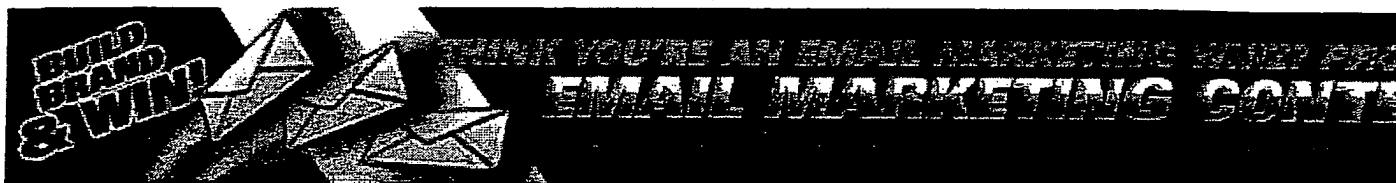
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Company Name	Location	Description
Great Industries Corp.	Ontario, CA	Mfr. Of Hook & Loop Tapes & Neoprene Sheet
Excel Thread & Sewing Supply	Passaic, NJ	Mfr. & Distributor Of Industrial Sewing Threads
Ideal Fastener Corp.	Oxford, NC	
Valley Products Co.	York New Salem, PA	Sew-In Labels, Narrow Fabrics, Cotton Or Synthetic Tapes
Atron Products & Services	Alpha, NJ	
Design / Craft Fabric Corp.	Niles, IL	
Hart Industries, Inc.	Owings Mills, MD	
Scovill Fasteners, Inc.	Clarksville, GA	
Grimes Industrial Products Group	Toronto, ON	
Baron Industries, Inc.	Pine Brook, NJ	
Consumer Care Products, Inc.	Plymouth, WI	Plastic & Fabric Tape
JRM Industries, Inc.	Passaic, NJ	
Kronke Co., Inc.	Hayward, CA	
Natvar Co., A Tekni-Plex Co.	Clayton, NC	Electrical Sleeving & Insulation, General Purpose & Specialized Plastic Tubing
Saunders Corp. Div., R.S. Hughes Inc.	Glendale, CA	
Ward & Kennedy Co.	Milwaukee, WI	
Merlin Industries	New York, NY	Hook / Loop Fasteners, Buttons, Zippers, Shoulder Pads For Apparel

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Company Name	Location	Description
Velcro USA Inc.	Manchester , NH	Hook & Loop Fastening Systems For Industrial Applications Where Separation & Rejoining Of Components Is Necessary, Or Where...
Perfectex Plus LLC	Huntington Beach , CA	Hook & Loop Fasteners. Sew-On Pressure-Sensitive Tapes. Heat & Solvent Activated Tapes. Fire-Retardant. Mil. Spec. Custom...
National Webbing Products Co.	Garden City Park , NY	Complete Line Of Thermoplastic & Metal Components For Handbags, Sportbags, Luggage, Straps, Apparel, Footwear, Belts, Auto,...
American Cord & Webbing Co., Inc.	Woonsocket , RI	Assorted Sizes & Materials
Levitt Industrial Textile Co.	Hicksville , NY	Dist. Of Velcro® Brand Hook & Loop Tape, Coins & VELCLOTH™ Brand Display Fabric. Special Colors, Widths, Lengths, Cut...
Speedtech International, Inc.	Chicago , IL	Mfr. & Dist. Of Hook & Loop Fasteners. Stocking VELCRO®, SPEEDWRAP® & Other Brands
WBC Industries, Inc.	Westfield , NJ	Hook & Loop Fasteners
Tapeler Tape Machine Corp.	Ashland , MA	Automatic Or Semi-Automatic High-Speed Tape Applicators For All Types Of Pressure Sensitive Tape With Or Without Liner...
Bond Products Inc.	Philadelphia , PA	Suppliers Of Narrow Fabrics, Including Woven Tapes, Hook & Loop Tape & Dots, Drawcord Braids, Webbing, Elastics, Tying...
Middleburg Thread & Sewing Supply	Warminster , PA	Sew-On, Pressure Sensitive, Heat Activated, Solvent Activated, Polyester, Cut Pieces, Fabricated Straps & Assemblies
Toileto Fasteners International	San Ysidro , CA	Reusable Hook & Loop Cable Ties, Wrist Bands & Custom Fabricated Straps For A Variety Of Applications. Ultrasonic Welding &...
Bardsco	St. Louis , MO	Reusable Hook & Loop Cable Ties, Wrist Bands & Custom Fabricated Straps For A Wide Variety Of Applications. Ultrasonic...
Touchtape, Inc.	St. Augustine , FL	Standard & PS Hook & Loop Tape & PS Dots Available. In-House Mfg. & Fabrication. Custom Orders
Lea & Sachs, Inc.	Des Plaines , IL	
FASTENation, Inc.	Passaic , NJ	Dist. & Fabricator Of Hook & Loop Fasteners, 3M Dual Lock
Precision Plastics	Beltsville, MD	Custom Mfr. Hook & Loop Fasteners, Made To Specs., In-House Design Assistance
Alliance	Hot Springs, AR	Designer & Mfr. Of All Varieties Of Rubber Bands For All Applications Including Office, Home, Industry & Produce. Packaging,...
Brunner Manufacturing, Inc.	Mauston, WI	Special Cold Headed & Formed Products For All OEM & After Market Needs. Special Bolts, Drilled

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<u>Robbins Lightning, Inc.</u>	Maryville, MO	Pins, Threaded Studs,... Mfrs. Of A Complete Line Of Lightning Protection & Static Grounding Materials Which Comply With The Requirements Of Codes...
<u>Blair Co.</u>	Elk Grove Village, IL	
<u>Cable Markers Co., Inc.</u>	Lake Forest, CA	Identification Products, Wire Markers, Computer Printable Systems, Labels, Tags, Heat Shrink Sleeving, Serialization, Bar...
<u>Advanced Cable Ties, Inc.</u>	Gardner, MA	Mfg. & Specializing In Nylon, Stainless Steel, & Hook & Loop Cable Ties, Cable Tie Accessories, Cable Clamps, Cable Wraps,...
<u>Allan Zipper Mfg. Corp.</u>	Brooklyn, NY	Custom & Stock 4-Gauge Vinyl Bags With Zipper, Snaps; For Drapes, Garments, Curtains, Comforters, Textiles
<u>Adhesives & Tapes Industrial Supply</u>	Vista, CA	Adhesives, Sealants, Coatings, Encapsulants, Tapes & Application Equipment. Casting Resin, Acrylic, Anaerobic,...
<u>Avery Dennison, Fastener Div.</u>	Framingham, MA	Cable Tie Products For Wire Hamessing, Packaging, Secure Holding & Bundling Functions

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Company Name	Location	Description
Textol Systems, Inc.	Carlstadt, NJ	Distributor & Fabricator Of Hook & Loop Products
Ribbon Webbing Corp.	Chicago, IL	Mfrs. Of Polypropylene, Nylon & Polyester Webbing, Also Hook & Loop, Gros Grain. Webbing For All Purposes, In All Colors &...
MULTI TRIM	New York, NY	Mfrs. & Dist. Of Full Line Of Industrial Sewing & Trimming Supplies In Any Colors & Styles, Hook & Loop Fasteners, Zippers,....
Converters Inc.	Huntingdon Valley, PA	
Hope Global	Cumberland, RI	Loop Attachment Strip For Automotive & Industrial Seat Builds
Quintana Industrial Supply, Inc.	Lawrence, MA	
U.S. Slide Fastener Corp.	Boston, MA	
Peters-De Laet, Inc.	South San Francisco, CA	
ATCO	Houston, TX	
Industrial Tape & Supply Co.	Marietta, GA	
Bead Industries, Inc.	Bridgeport, CT	
Rip 'N Grip Industries, Inc.	Palmdale, CA	

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3M™ Scotchmate™ Reclosable Fastener Hook SJ3576

3M™ Scotchmate™ Reclosable Fastener Loop SJ3401

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3M™ Scotchmate™ Reclosable Fastener Loop SJ3527

3M™ Scotchmate™ Reclosable Fastener Loop SJ3529

3M™ Scotchmate™ Reclosable Fastener Loop SJ3531

3M™ Scotchmate™ Reclosable Fastener Loop SJ3533

3M™ Scotchmate™ Reclosable Fastener Loop SJ3571

3M™ Scotchmate™ Reclosable Fastener Loop SJ3577

3M™ Scotchmate™ Reclosable Fastener MP3401/MP3402

3M™ Scotchmate™ Reclosable Fastener MP3526/MP3527

3M™ Scotchmate™ Reclosable Fastener Plastizier Resistant Hook and Loop SJ3522/SJ3523

3M™ Scotchmate™ Reclosable Fastener Plastizier Resistant Hook SJ3522

3M™ Scotchmate™ Reclosable Fastener Plastizier Resistant Loop SJ3523

3M™ Scotchmate™ Reclosable Fastener SJ3418FR

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**In re Application of:****TENNIS RACQUET EQUIPPED
WITH A TENNIS BALL RETRIEVER****Alice H. Howe****Filed: 09/06/00****) Art Unit: 3711****)****) Serial No.: 09/655,743****)****) Docket No.: MPH 99-46****)****AFFIDAVIT UNDER 37CFR1.132****STATE OF WISCONSIN)****)****COUNTY OF LA CROSSE)****1. ALICE HOWE, being duly sworn, deposes and states as follows that:**

1. I was granted an R.N. degree by St. Frances School of Nursing. I was employed as a Registered Nurse at the La Crosse Clinic from 1958 to 1969; at the University of La Crosse Health Center from 1970 to 1980; and at St. Frances Hospital from 1980 to 1995. I have been an avid tennis player and fan for more than half a century, having played tennis on tennis courts throughout the U.S.A., Mexico and Europe.

2. I devised the testing procedures used to test the efficacy of hook and loop type fasteners as reported in the Example of the captioned patent application.

3. I am also the applicant of the invention described and claimed in the above application.

4. I have read and am familiar with the Office Action of Paper No. 3, the claims as currently to be amended in the response to Paper No. 3 by my attorney, the cited references of Paper No. 3, and the rejection of claims 1-7, 9, 10 and 12 as unpatentable over 35USC103(a) over U.S. Pat. No. 4,834,393 (*Feldt*) or French Patent No. 2594037 (*Musslin*), and either in view of U.S. Pat. No. 5,077,870 (*Melbye et al*) and alleged

applicant's admission of prior art in the specification; and the rejection of claims 8, 11 and 13-15 as unpatentable over *Feldi*, or *Musslin*, and in view of *Melbye* and applicant's admission of the prior art in his specification and in further view of U.S. Patent cited No. 4,993,712 (*Urwin*).

5. Pursuant to the request of my patent attorney, a mushroom-type strip fastener, representative of U.S. Patent No. 5,077,870 (*Melbye*), was tested under identical testing procedures as reported in the Example of the captioned patent application to determine its ability to engage and lift ordinary tennis balls from the ground. Representatives of the manufacture and patent assignee of the U.S. Patent No. 5,077,870 (*Melbye*) indicated that the loop mushroom-type strip fasteners (Dual-lock) used in this test was fairly representative of the mushroom-type fasteners of U.S. Patent No. 5,077,870. In the test, a one-foot length of the mushroom-type strip fastener was attached by its own adhesive backing to the outer edge of the shoulder of a Wilson tennis racquet. Pursuant to the test, three of the most commonly used tennis balls, namely Wilson Championship tennis ball, Dunlop Tournament tennis ball, and Penn Medalist tennis ball were tested. In each test, ten attempts were made to engage and lift each ball by firmly contacting the face of the "Dual-lock" fastener material to the felt or nap of the tennis ball.

6. In all thirty attempts of paragraph 5 above, to lift the three different types of tennis balls off the ground with the mushroom-type strip fastener of U.S. Patent No. 5,077,870 (*Melbye*), all attempts were completely unsuccessful upon all of the tested tennis balls. The "Dual-lock" mushroom-type fastener of U.S. Patent No. 5,077,870 (*Melbye*) failed to adhere, stick or attach onto any of the felt surfaces of any tennis ball in any of the aforementioned 30 test attempts.

7. It is therefore concluded that the tested mushroom-type strip fastener of U.S. Patent No. 5,077,870 (*Melbye*), when attached to the edge of an ordinary tennis racquet, is totally ineffective for retrieving ordinary tennis balls off the ground upon tangential contact as prescribed by my amended claims.

8. The physical and functional properties of the *Melbye* mushroom-type fastener do not permit it to engagingly attach or adhere to the felt surface of a common tennis ball as evidenced by the test results reported herein.

9. The mushroom-type fastener of U.S. Patent No. 5,077,870 to *Melbye* cannot engage and lift a grounded tennis ball upon tangential contact as defined by the amended claims of the captioned application.

10. It is factually incorrect to conclude that *Melbye* U.S. Patent No. 5,077,870 at column 1, lines 15-23 discloses Velcro™ and ScotchMate™ are functional equivalents as hook-and-loop fasteners or that equivalency may be extended to cover the uniquely different pre-shrunk nylon monofilament hooks of the highly specific and narrowly defined characteristics as defined by the currently amended claims.

11. The mushroom-type fastener of U.S. Patent No. 5,077,870 to *Melbye* fails to meet the claimed requirements of a series of pre-shrunk nylon monofilament hooks of:

- a) an average height of at least 1.85 mm
- b) an average diameter of at least 8.25 mil
- c) an average hook width of at least 1.0 mm; and
- d) an average hook depth of at least 0.6 mm

12. United States Patent No. 5,077,870 to the *Melbye* patent discloses and claims "a mushroom-type hook strip" having an "array of upstanding stems" and "a mushroom head at an end of the stem" as shown in Figure 1 of the *Melbye* patent which is clearly different in physical and functional characteristics from the claimed preshrunk monofilament hooks as illustrated in Figure 5 of the captioned application.

13. The mushroom headed stem of U.S. Patent No. 5,077,870 to *Melbye* patent is completely different in physical structure and function from the claimed hooked configuration and characteristics of the claimed preshrunk monofilament hooks.

14. The *Melbye* mushroom hook fasteners are neither the actual nor functional equivalent of the monofilament hooks as characterized and defined by the currently

pending claims in the captioned application as verified with the testing results reported herein.

15. For comparison purposes to the mushroom-type fastener of U.S. Patent No. 5,077,870, a monofilament as defined in claims 4-15 of the captioned application, when tested pursuant to Example 1, provided the unexpectedly superior efficacy upon tangential contact onto all three types of grounded tennis balls, as has been reported in the Example of the captioned patent applicant.

16. The above comparative test results represent a fair comparison between the claimed preshrunk monofilaments of the captioned application and the mushroom-type fasteners of U.S. Patent No. 5,077,870.

17. Further deponeth sayeth naught.

Alice H. Howe
Alice H. Howe
Affiant

10/18/01
Date

STATE OF WISCONSIN)
) ss.
COUNTY OF LA CROSSE)

Personally came before me this 18th day of October, 2001,
the above-named Alice H. Howe to me
known to be the person who signed as Affiant who executed
the foregoing instrument and acknowledged the same.

[Signature]
Notary Public
State of Wisconsin

My commission expires: May 8, 2005

Per Alice Howe 4/9/2002

She spoke with Wilson Ball Co., Chicago, Illinois, who advised her as follows:

Tennis Ball Standard of Identity:

- 1. Round**
- 2. Diameter of no more than 6.5 cm and no less than 6.3 cm**
- 3. Made of rubber core with two halves glued together to make the sphere.**
- 4. Injected with air pressure (12 psi)**
- 5. Must be covered with felt; yellow or green**

(they also number the balls [1, 2, 3 or 4] for players' use and identity; and they stamp the Wilson brand name on the ball)

THE MAKING OF A TENNIS BALL

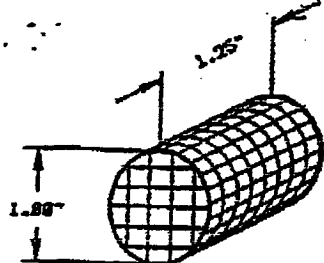
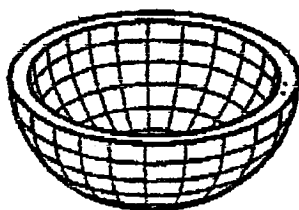
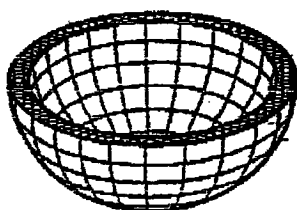
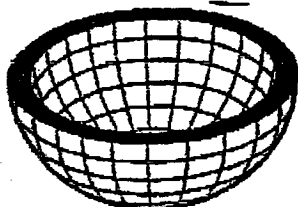
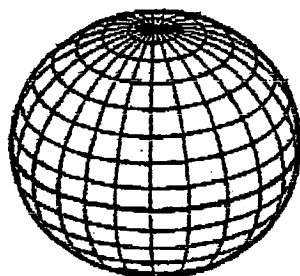
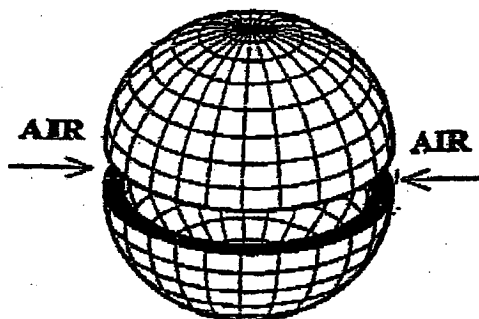
- Have you ever wondered how a tennis ball is made ?
 - Or, why there are so many different types of tennis balls ?
 - Have you ever wondered how a tennis ball got it's fuzzy, yellow cover ?
- All of these questions, and more, will be answered if you continue to read on.

FIRST A LITTLE HISTORY :

For many years, little effort was made to standardize the construction, and performance of tennis balls. But now, the International Tennis Federation (ITF) not only specifies the size, weight, and construction of the ball, but they also specify the hardness, and resiliency (or bounce characteristics) of the ball. The current ITF specifications are as follows:

	Size (inches)	Weight (grams)	Construction	Hardness (inches)	Resiliency (inches)
Maximum	2.700	58.5	Fabric cover with stitchless seams	.290	58.0
Minimum	2.575	56.7		.220	53.0

Historians believe that tennis originated from the Greek, and Roman Handball Game. The ball for this game consisted of a tightly compressed cloth, covered with a lighter layer of cloth, similar to today's tennis ball. Next, came balls with wool cores, and a hand stitched leather cover. These balls were more like soft baseballs. Occasionally, these balls were manufactured with a feather core. These balls did not possess much bounce, and were significantly heavier than today's ball. In 1873, the game "Sphairistike", or Lawn Tennis was invented, and played with a lightweight, uncovered rubber ball. In England, Mr. John Heathcote, who was a real champion of tennis as we know it, found the uncovered ball too light, especially during windy play conditions. In response to this, he and his wife developed the familiar pattern of two dogbone-shaped felt panels, which would completely envelope the rubber core. For these early samples, the felt cover panels were hand stitched onto the rubber core, similar to a baseball. In the late 1920's, special adhesives were developed for attaching the felt cover to the core, thereby eliminating the stitched cover. This ball is what we now think of as a tennis ball.

**RUBBER SLUG****HALF SHELL****HALF SHELL WITH
BUFFED SEAM****HALF SHELL WITH
SEAM ADHESIVE****BONDED CORE****HOW A TENNIS BALL IS MADE :**

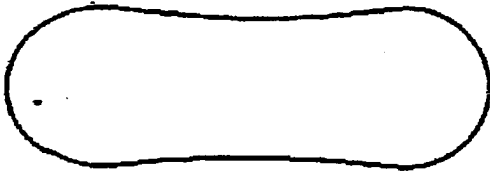
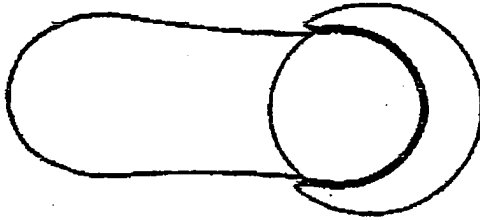
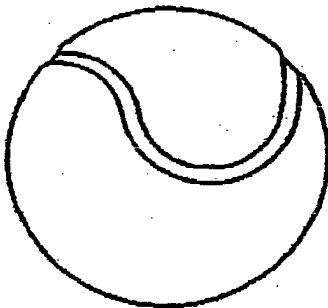
STEP #1 – Making the Pressurized Core : When Wilson Sporting Goods manufactures a tennis ball, they begin with the finest rubber, and premium quality ingredients available. These ingredients are first mixed with precision in a large rubber mixer, to produce a superior rubber compound. Next this compound is extruded, and cut into cylindrical - shaped slugs, measuring about 1" in diameter, and 1.25" long.

Each slug is then placed into a press, where it is molded, under heat, and pressure, to form a half shell, which will become one half of a finished core.

When the half shells are removed from the press, each hemisphere has a thin web of rubber around the entire perimeter of the half shell, which is called flash. This flash is removed in a precision stamping press, which trims away the unwanted flash. The seams of these trimmed half shells are then buffed, using a sandpaper buffing disc, and then coated with a special, high - strength seam adhesive.

An equal number of these half shells are then carefully placed into a special press, so that each pair of half shells have their buffed, and cemented seams, facing each other. Just before the press closes, a precise amount of air pressure (approx. 15 psi) is introduced into the small chamber between the mated half shells. Once the pressure stabilizes within the chamber, the press closes completely, thereby, trapping the air pressure within the core. This air pressure provides the tennis ball it's lively bounce characteristics. Under heat and pressure the two half shells are bonded, or vulcanized, together. We now have a pressurized tennis ball core.

These cores are then tumbled in a large, sandpaper-lined drum to roughen the surface of the core, in preparation for the application of core coating adhesive. These abraded cores are then dipped into a special core coating adhesive, and dried to the proper consistency, so that the adhesive becomes tacky, and ready to receive a felt cover. This adhesive will provide a strong bond between the core, and cover.

**FELT DOGBONE****BALL COVERING****FINISHED BALL****LOGOED BALL**

STEP #2 – Preparing the Felt Dogbones: The other piece of the puzzle is the felt. Felt is a fabric composed of primarily high grade wool, and nylon. It arrives at the Wilson Factory in large rolls, at which time it is checked for thickness, weight, color, and wear properties before processing into dogbones.

The first step in preparing the felt is to apply adhesive to the backside of the felt. This is accomplished in a large machine which coats the entire roll of felt, in a continuous process. This machine also dries the felt sufficiently so that the felt may be re-rolled at the end of the machine. This adhesive will make sure the felt does not separate from the core during play.

Next, these adhesive coated rolls of felt are fed into a machine which cuts the felt into the familiar dogbone shaped panels. The dogbones are then stacked into clamping fixtures, and squeezed in compression, for the next operation. Two dogbones are required for each finished ball.

The packs of felt dogbones, held in the clamping fixture, are then dipped into a tank containing a very special adhesive, which coats only the edges of the felt dogbones. This adhesive will eventually become the familiar white, curvy seam of the tennis ball. After drying to the proper degree, the felt dogbones are then "picked" from the dipped packs, and placed into a ball covering machine, where they meet one of the adhesive coated rubber cores, from Step #1. The ball covering machine precisely places the two felt dogbones onto the rubber core.

This is not yet a finished tennis ball. The covered balls are then placed into a final molding press, where heat, and pressure bond the covers to the core, and also form the familiar white seam of the ball. When the balls leave this final molding process, the felt on the balls is in an extremely compressed state, from the heat and pressure of the press. The felt is fluffed back to it's original form in a large industrial dryer. Initially, steam is introduced into the fluffer to loosen up the felt fibers, and allow the fibers to spring back to their original position. Finally, the fluffer dries the balls using hot, circulating air, similar to a clothes dryer at home.



We now have a finished tennis ball. These balls are next inspected for conformance to Wilson's rigid quality standards, and if found acceptable, will be stamped with the familiar "Wilson" logo. Just before the application of the logo, each ball must pass a compression test, which assures that the ball has the proper air pressure.

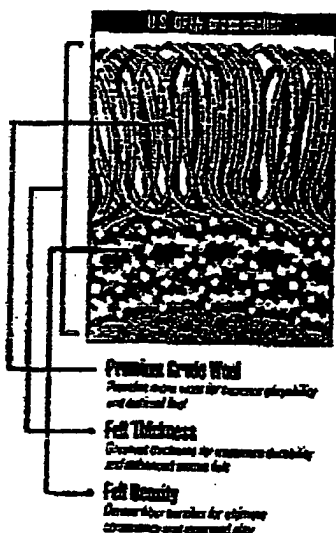
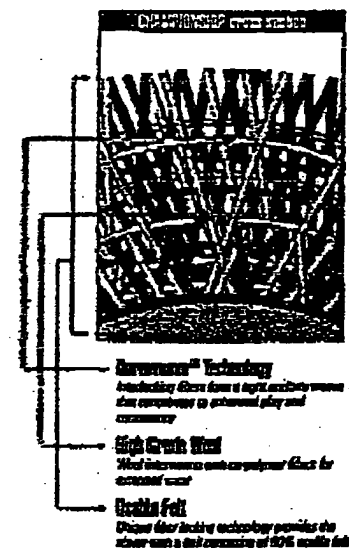
The finished balls are then placed into recyclable plastic cans, pressurized to the proper can pressure, and sealed with an aluminum, EZ Open lid. Each can is tested to insure that it is properly pressurized, and sealed. Lastly, a plastic overcap, and label are placed on the cans, and the cans are placed into cardboard boxes, ready for shipment to our customers.

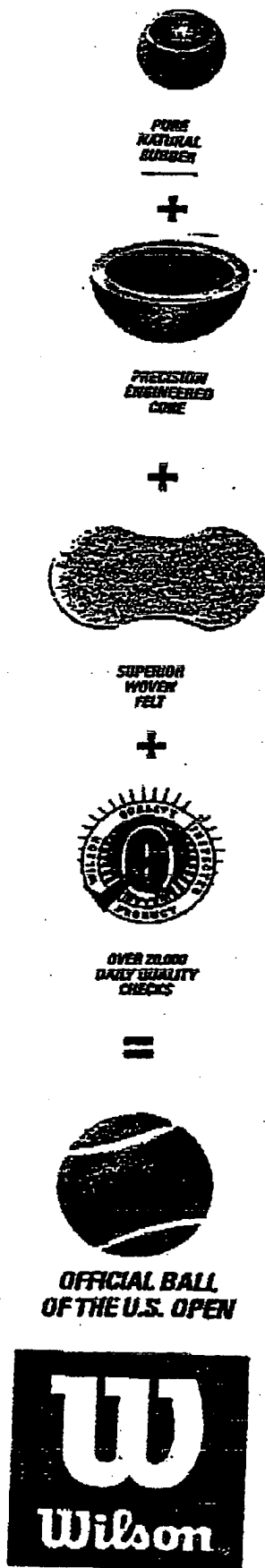
TYPES OF TENNIS BALLS :

You may still be wondering why there are so many different types of tennis balls. There are two major categories of tennis balls — Pressurized, and Pressureless. The majority of tennis balls sold today are Pressurized Products. These products are packaged in a specially designed pressurized container, which keeps the balls fresh for years, until the can is opened, and the seal is broken. Pressurized tennis balls are more lively than Pressure-less balls, and feel lighter off the racket.

Pressureless tennis balls are manufactured with a thicker rubber wall, and with no internal ball pressure, which makes them play slower, and feel heavier off the racket. On the positive side, because there is no internal air pressure to lose, Pressureless tennis balls maintain their bounce characteristics better than pressurized balls, over the life of the ball.

Two other tennis ball products are the High Altitude Ball, and the Grass Court Ball. These two products are specially designed for specific playing conditions. The High Altitude Ball is made with a slightly lower air pressure than the Standard Wilson Ball, to compensate for the slightly lower barometric pressures found at altitudes above 3,500 feet. This change insures that the High Altitude Balls bounce correctly at higher altitudes. The Grass Court Ball features specially treated white felt that is ideal for grass court play.





Tennis balls are also categorized by the type of felt used to produce the balls. The first type of felt, called woven, is typically made from a combination of wool, and nylon fibers, woven together in a large textile loom. The woven fabric is subjected to a large number of secondary operations, which remove the woven pattern, and provide the familiar "felt" look of a tennis ball. This type of felt is used on the Wilson U.S. Open Products.

Duraweave Felt was developed by Wilson, using a high grade wool that is uniquely interlocked with copolymer fibers to form a tight uniform weave. This construction provides a long lasting felt, which enhances the playing characteristics, and consistency of the ball. This type of felt is used on the Wilson Championship Products.

Each of the felts described above support two different levels of play – Extra Duty and Regular Duty. Extra Duty Felt is designed for play on abrasive surfaces where the fibers must withstand the shearing, and cutting action of abrasive courts. This felt does not normally fluff excessively, although high humidity, or hitting the ball with a great deal of spin may cause Extra Duty Felt to fluff more than normal.

Regular Duty Felt is designed for soft, smoother court surfaces, and indoor courts. The increased moisture of clay, or grass courts, and the high level of static electricity found in indoor courts will cause the felt to fluff more than normal. In addition, smooth court surfaces will pull, and tug at a felt (rather than the shearing, and cutting action associated with abrasive courts), causing more fluff on the felt. Therefore, it is crucial that Regular Duty Felt be designed to be highly resistant to fluffing.

So that is the story of why there are so many different types of tennis balls, and how they get their fuzzy covers. The yellow colored felt was introduced in the early '70's to improve the visibility for the players and the TV audience. From the finest raw materials, highest quality felts, and meticulous control of manufacturing processes, comes the "Wilson U.S. Open Ball... the Tennis Ball as Tough as the Tournament".

TENNIS BALLS FUN FACTS

Wilson is rated as the best playing ball in tennis by over four hundred top tennis players.

THE BEST PLAYERS PICK WILSON AS THE BEST BALL!

Wilson is the ball purchased most often by the best tennis players.

Wilson is the only ball used at all USTA National Championships.

Wilson is the only ball used by the WTA-The Women's Tennis Association

Wilson is the official ball of the US Open since 1979.

Wilson tennis balls are sold throughout the world including France, Germany, England, Japan, Singapore, Hong Kong and Latin American countries.

With the consistent quality, innovation and performance Wilson delivers, it has become the standard of play for an industry.

Wilson, the Number One ball

PUTTING IT ALL TOGETHER

Wilson Tennis Ball Manufacturing Fact Sheet

The first step in making a tennis ball is to prepare and mix together the ingredients that make the ball's core. The core of a tennis ball includes approximately 14 different materials. #1 is natural rubber. The tennis core stock undergoes extensive quality control testing throughout the blending process to ensure consistency.

This rubber is then made into thick sheets, milled, and then a machine punches out "slugs" which are cylindrical shaped chunks of rubber that are all the same size and shape. This "slug" is then molded into a perfectly shaped hemisphere under controlled curing conditions of time, temperature and pressure (referred to as first cure). These curing conditions are continuously monitored in order for the half shell to meet our specific requirements.

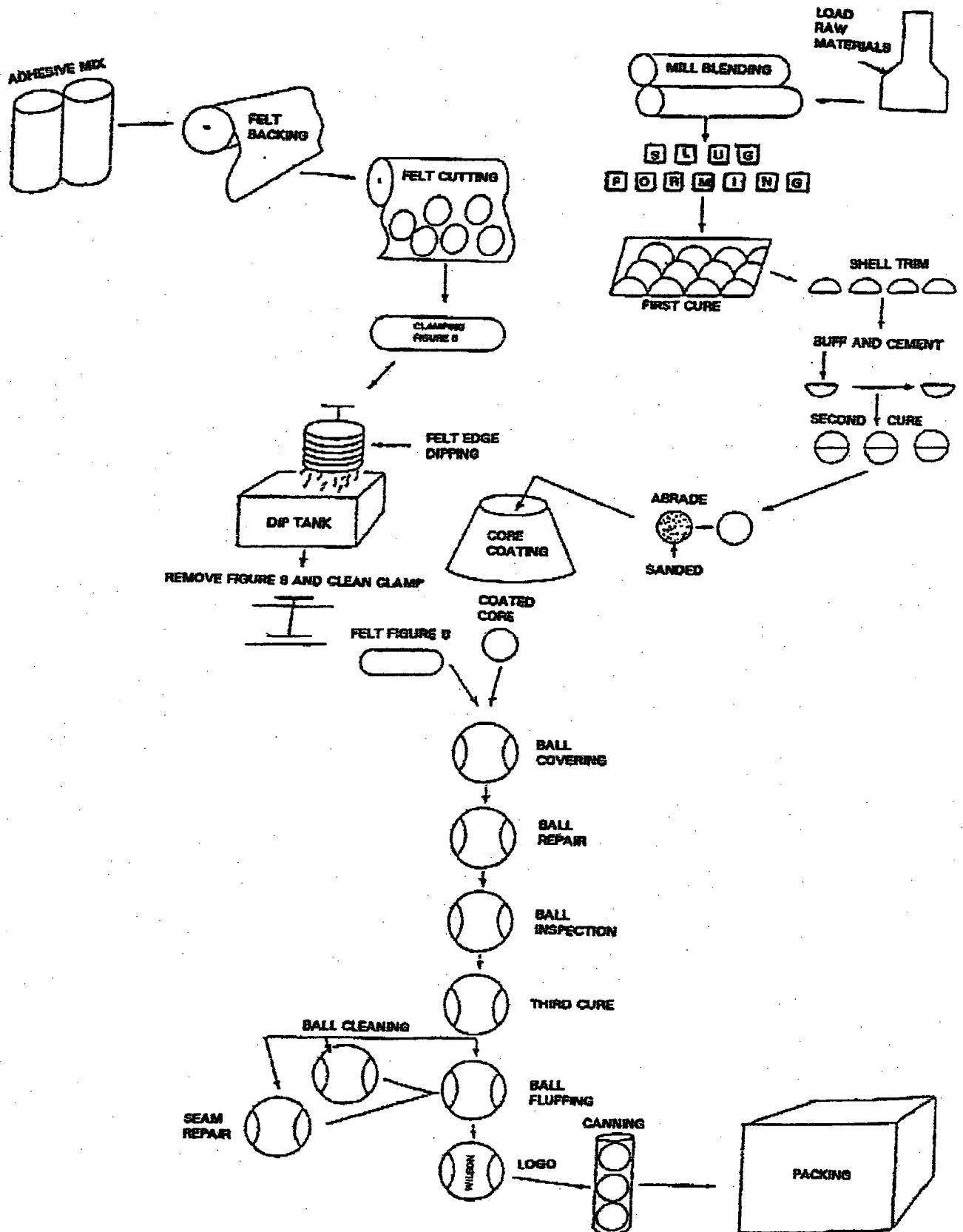
Each half shell is then buffed to even true the edges and prepare them for the adhesive that is used to bond the two halves together. The half shells are loaded into the top and bottom of a machine that looks like a waffle iron or an egg carton and they are cured here under controlled time, temperature and pressure. The inner chamber is pressurized so that the air trapped inside as the halves are fused together is at the same pressure (referred to as second cure). The adhesive on the half shell edges fuses the two half shells together for a tight seal. The pressure of each of our second cure presses are constantly monitored to ensure consistency of the core.

QC will then sample cores to test them for weight, size, rebound and deflection. The surface of the cores will then be abraded (roughened) in preparation for adhesion of the felt strips. The core is then dipped in a high quality adhesive compound and oven dried in preparation for the cover application.

A mix of specifically designed fibers are processed together to form rolls of felt material. These rolls are then "back coated" with a specially designed adhesive. Several rolls of back coated felt are fed into an automated high-speed cutting machine which punches out the figure 8 shaped pieces of felt and packs them together into a bundle. The felt packs are then dipped into a vat of white seam adhesive which coats only the edges of the felt. The felt packs are dried and the figure eights are then separated. The back coated figure eights are now inserted into the felt covering machine and placed on the core. At this point, the product starts to resemble a tennis ball. The final cure insures a perfect bond between the ball and cover. Under conditions of time, temperature and pressure, the felt is bonded to the core and the seam adhesive is cured (referred to as third cure). Extensive quality control checks are conducted throughout this entire process to assure a high quality finished product.

After third cure, the balls are steam fluffed to raise the nap on the felt, giving the balls their fuzzy appearance. After the fluffing process, the balls are visually inspected for cosmetic quality. Next comes the stamping of the company logo and number. The logo operation is also systematically controlled in order to maintain the proper positioning. QC will then sample finished balls and test them to assure that they meet USTA and player specifications. Three balls are sealed in air tight pressurized cans. The pressurized can keeps the ball pressurized for excellent bounce and playability.

FLOW CHART



USTA TENNIS BALL SPECIFICATIONS

APPENDIX

RULE 3

BALL - SIZE, WEIGHT AND BOUND

¹ The ball shall have a uniform outer surface and shall be white or yellow in color. If there are any seams they shall be stitchless. The ball shall be more than two and a half inches (6.35 cm) and less than two and five-eighths inches (6.67 cm) in diameter, and more than two ounces (56.7 grams) and less than two and one-sixteenth ounces (58.5 grams) in weight. The ball shall have a bound of more than 53 inches (135 cm) and less than 58 inches (147 cm) when dropped 100 inches (254 cm) upon a concrete base. The ball shall have a forward deformation of more than .220 of an inch (.56 cm) and less than .290 of an inch (.74 cm) and a return deformation of more than .350 of an inch (.89 cm) and less than .425 of an inch (1.08 cm) at 18 lb. (8.165 kg) load. The two deformation figures shall be the averages of three individual readings along three axes of the ball and two individual readings shall differ by more than .030 of an inch (.08 cm) in each case. All tests for bound, size and deformation shall be made in accordance with the regulations in the Appendix hereto.

¹ The Official USTA Yearbook and Tennis Guide With The Official Rules, H.O. Zimmerman, Inc., 156 Board St., Lynn, MA, 01901, 1977, pp. 415.

TENNIS BALLS

DIFFERENCES BETWEEN PRESSURIZED & PRESSURLESS TENNIS BALLS

1. Pressurized balls have traditionally been the ball of choice in this country. This preference for pressurized is based on the following:
 - They are typically more lively than pressureless and feel lighter off the racquet.
 - Pressurized balls typically sound a little crisper when hit.
 - Pressurized balls (in this country) are very inexpensive. In 1930, a can of 3 Wilson tennis balls could be purchased for \$1.50 in a Sears & Roebuck catalogue. Over sixty (60) years later, that same can of balls may be purchased for under \$2.00. With this low price, a large majority of players open a new can of tennis balls at every outing.
2. Pressurized balls are packaged in specially designed pressurized containers which are capable of keeping the balls fresh for years in storage. However, once the seal of the can is broken and the pressure is released, the balls will begin to lose air and, therefore, liveliness. The rate at which this occurs is a function of the following:

TEMPERATURE: The higher the temperature, the faster the balls will lose air (liveliness). For example, at room temperature a ball would typically lose approximately 2 psi of air pressure in a 2-month time period. This would result in a 2 inch loss of rebound height (liveliness) which a good player could potentially notice.

At elevated temperatures, such as 100° F, this loss of air pressure would occur much faster - probably 2 weeks instead of 2 months. For this reason, it is not a good idea to store opened tennis balls in the trunk of your car during the hot summer months. We recommend storing the balls at a cool temperature, even a refrigerator, if you have the room.

USAGE: Although we don't have any hard data to substantiate this claim, we do believe balls lose air much faster when they are used in play. The impact with the racket and court during play heat up the balls, resulting in a higher internal pressure and, consequently, a higher permeation rate.

3. In sharp contrast to the above, pressureless tennis balls have no internal pressure inside the core. Therefore, they will not lose liveliness over time. This provides more consistent performance over time. The most frequent complaint about pressureless balls is that they are slow playing and feel heavy on the racket. The Wilson "advantage" tennis ball is specially formulated to eliminate this heavy feeling on the racquet. Additionally, its slightly slower playing characteristics make it ideal as a practice ball since it provides a little extra time to prepare for shots. Pressureless balls are ideal for ball baskets since they don't lose air pressure (liveliness) over time. In areas of the world where tennis balls cost 2-3 times more than in the US, pressureless balls enjoy a significant market share. They represent an excellent value to the cost conscious consumer.

EFFECTS OF TEMPERATURE ON THE REBOUND HEIGHT OF A TENNIS BALL

ITEMS TESTED

6-Wilson T1001 Championship Extra Duty tennis balls

TEST PROCEDURE

- 1. Balls were kept overnight at room temperature and measured for 100" rebound height the next day.**
- 2. Balls were placed in a refrigerator overnight at a temperature of 38°F. The next morning, one ball at a time was removed from the refrigerator and measured for rebound height as quickly as possible.**
- 3. Balls were placed in an oven at 100°F for 6 hours. It is important to note that the balls were placed inside a small cardboard box to prevent the hot oven air blast from impinging directly on the balls. After 6 hours, one ball at a time was removed from the oven and measured for rebound height as quickly as possible.**
- 4. Step #3 was repeated at an oven temperature of 130°F.**

TEST RESULTS

The results on the 6 tennis balls tested were averaged and plotted as a function of temperature. The results may be found in Graph 1 attached.

DISCUSSION OF RESULTS

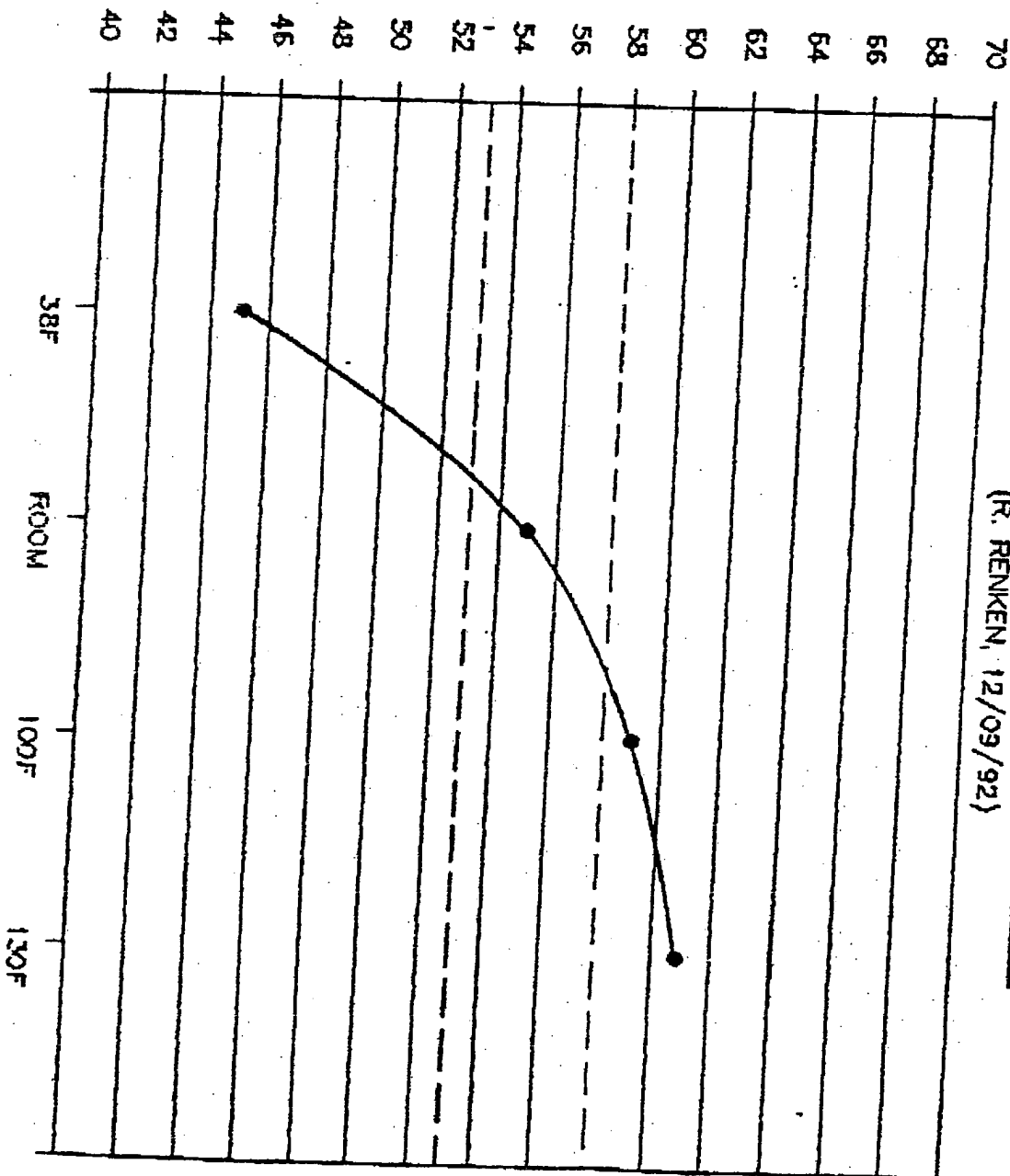
- 1. Temperature was found to have a strong influence on rebound height.**
- 2. Rebound height was most effected at the lower temperature of 38°F. On average, the balls lost 10 inches of rebound in going from 72°F to 38°F. It is important to note that if the balls at low temperatures were used in play, they would quickly increase in rebound height because of the warming of the balls due to flexing of the core.**
- 3. The balls quickly fell out of the rebound specifications of 53" - 58" when exposed to the 3 test temperatures.**

REBOUND FROM 100" DROP, Inches

GRAPH 1

REBOUND HT VS TEMPERATURE

(R. RENKEN, 12/09/92)

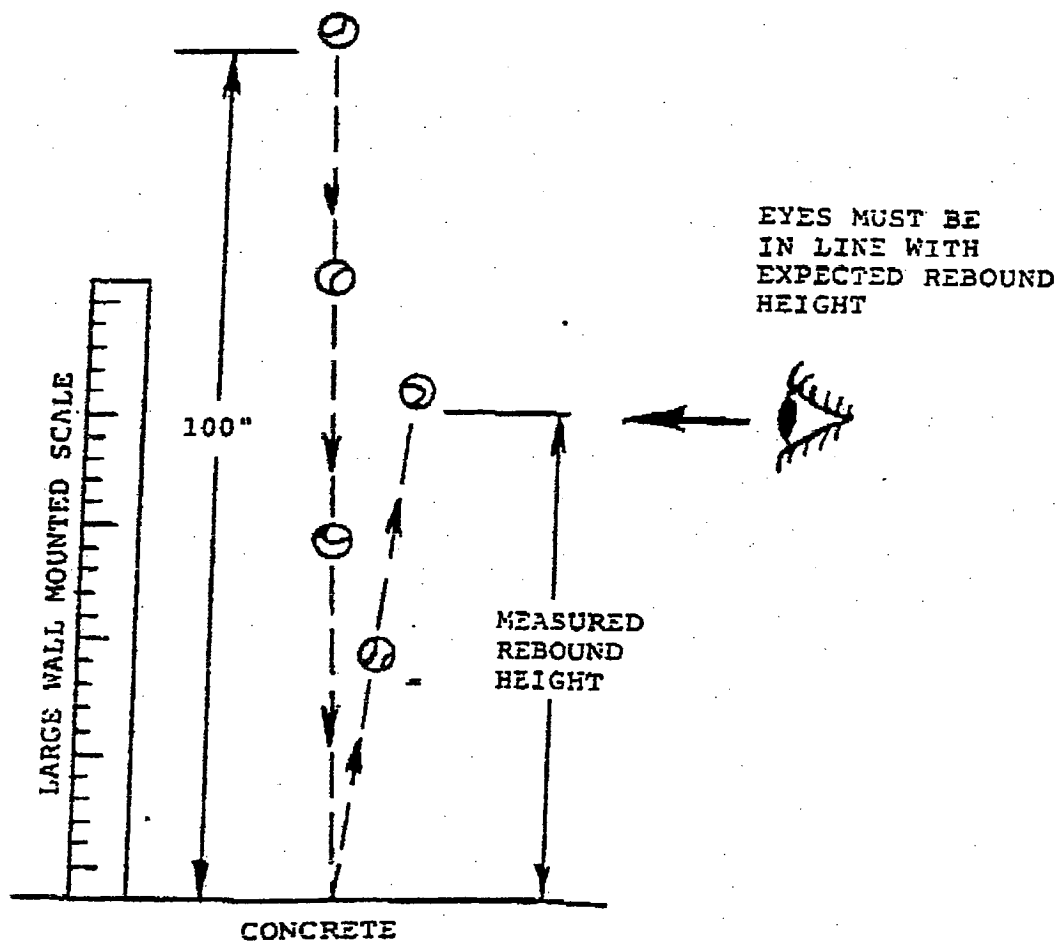


REBOUND
SPEC.
53" - 58"
AT ROOM TEMP

TEMPERATURE, Degrees F

100" REBOUND HEIGHT TEST

1. Balls were dropped from 100" (as measured from the bottom of the ball) onto a solid base, preferably concrete or granite.
2. Rebound height is measured to the bottom of the ball using a large graduated scale mounted behind the ball.
3. Care must be taken to assure that the eyes of the tester are in line with the approximate rebound height of the ball.
4. Three readings must be taken for each ball, and the average of the three is recorded as the rebound height.



PERMEABILITY OF TENNIS BALL CORES

The can is pressurized (not vacuum) with approximately 12 LB/IN² pressure to maintain the pressure in the ball. Once the can is "popped", and pressure is released, the balls will lose air pressure at a slow rate, similar to a car tire losing air. Below is a test report showing the change in "Rebound Height" and "Deformation" as a function of time (or days out of the can). As you will notice, the balls lose rebound height (bounce) and become softer. The air pressure leaks through the microscopic pores in the wall of the rubber core.

PERMEABILITY TEST OF TENNIS BALL CORES

ITEMS TESTED:

Twelve (12) Wilson Extra Duty tennis balls made with the following compounds:

>

>

Confidential

>

TEST PROCEDURE

Each group of balls were tested initially right out of the can for rebound and deformation. The balls were then placed in the lab conditioner at the standard test conditions of 68°F and 60% Relative Humidity. The balls were then re-tested every two (2) days for three (3) weeks. After 27 days, the balls were re-tested every seven (7) days. After 41 days the balls were re-tested every thirty (30) days. The balls were out of the can for a total of 196 days when the test was discontinued.

TEST RESULTS & CONCLUSIONS

The following table lists the rebound and deformation mean and standard deviation for the various compounds over a number of days out of the can:

This data has been plotted and curve fitted by computer using linear regression formula. The coefficient of determination (R^2) and the individual predication equations are given in the following table:

REBOUND		DEFORMATION	
R^2	$\hat{Y} = A + Bx$	R^2	$\hat{Y} = A + Bx$
0.948	$Y = 55.81 \pm 0.034x$	0.984	$Y = 0.2731 + 0.00031x$
0.975	$Y = 55.31 \pm 0.032x$	0.979	$Y = 0.2371 + 0.00028x$
0.969	$Y = 55.06 \pm 0.036x$	0.984	$Y = 0.2320 + 0.00028x$
0.972	$Y = 56.36 \pm 0.038x$	0.974	$Y = 0.2393 + 0.00026x$

What happens to the rebound of tennis balls once they are removed from the pressurized can?

- > The rebound of all tennis balls decreases over time once they are removed from the can; this is due to pressure loss. The rebound loss, however, is only 0.032" to 0.038" a day.

- Based on a 5" difference between the 58" upper spec and 53" lower spec for rebound, it would take approximately 131 to 156 days for these balls to lose 5" in rebound at 68°F and 60% Relative Humidity.
- The rate of rebound loss at 68°F and 60% Relative Humidity varies from compound to compound. Based on the slopes of these lines, the compounds can be ranked in order of least amount of loss in rebound:

- Least 1.
2. *Confidential*
3.
Most 4.

What happens to the deformation of tennis balls once they are removed from the pressurized can?

- All tennis balls soften over time once they are removed from the can; this is due to pressure loss. The amount of softening, however, is only 0.00026" to 0.00031" a day.
- Based on a 0.060" range for the deformation specifications of 0.220" to 0.280", it would take 194 to 231 days for these balls to soften 0.060" at 68°F and 60% Relative Humidity.
- Based on the slope of the linear regression lines, the compounds may be ranked in order of least amount of softening at 68°F and 60% Relative Humidity:

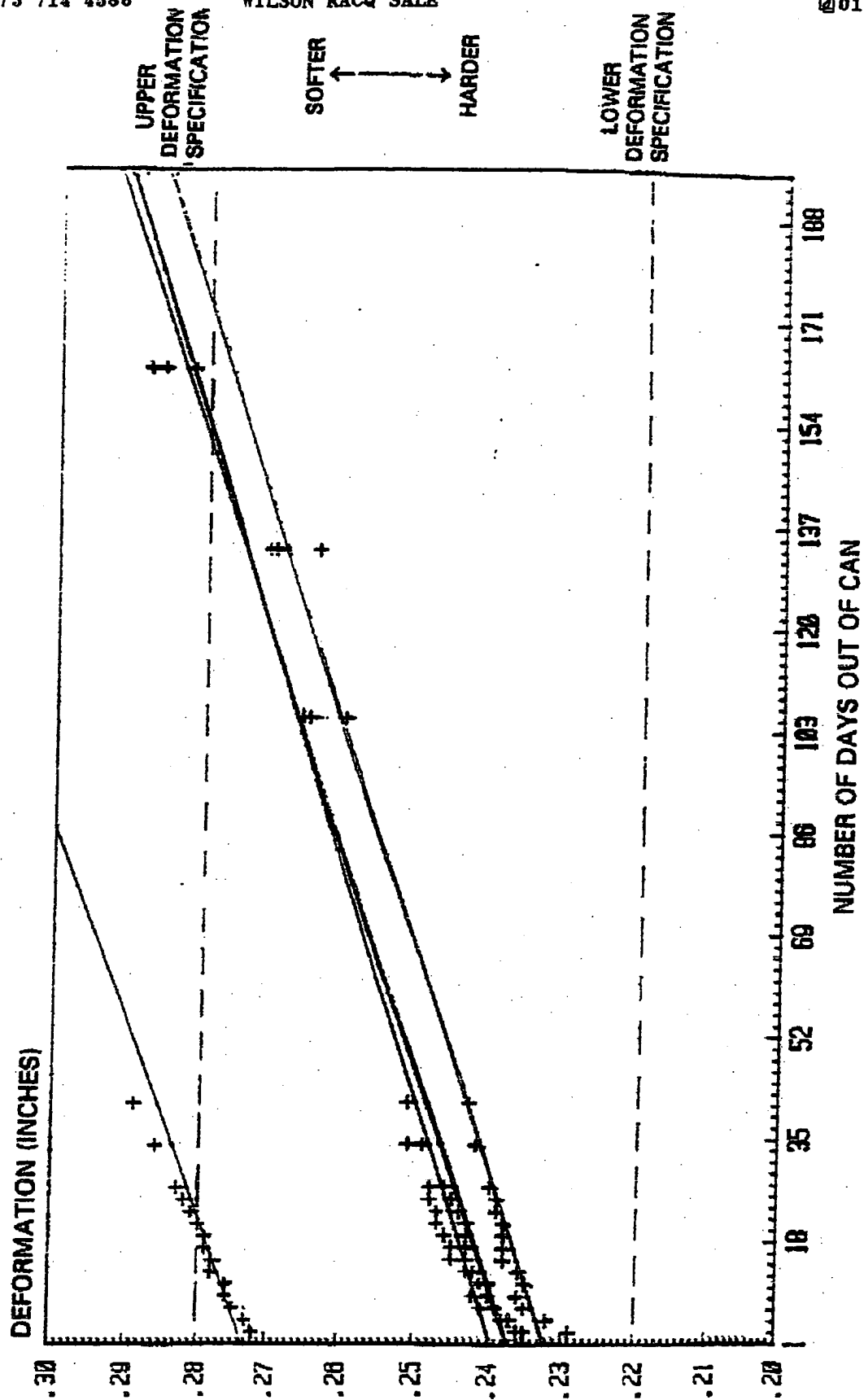
- Least 1.
2. *Confidential*
3.
Most 4.

SUMMARY

It is important to note the initial rebound and deformation of each compound. Compounds that have a rebound near the upper limit (58.0") will remain "in spec" longer than balls that are near the median (55.5") or the lower limit (53.0"). The same discussion applies to deformation; balls that are near the "hard" side of the specification (0.220") will remain "in spec" longer than balls that are nearer the specification median (0.250").

This test does not accurately measure the life of tennis balls because, in reality, balls are taken out of the can, played and then allowed to sit in non-pressurized cans at various temperatures. The actual play time and amount of hitting will accelerate the changes in rebound and deformation. At best, this test can be used to determine how long a tennis ball is playable once the can has lost its pressure.

LEAKAGE TEST - 68°F (LINEAR REGRESSION)



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- b. Ex Parte Hartmann 186 UPSO 366
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- d. Ex parte Hartmann 186 USPQ 366
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- j. In re Freed 165 USPQ 570 (CCPA 1970)
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- d. M.P.E.P. 2143.03 (2100-100, Rev 1, Feb 2000)
- e. M.P.E.P. 2144.05 (Col. 1, first complete paragraph, Page 2100-97, Rev 1, Feb 2000)
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- f. M.P.E.P. 2145 2,23 (2100-123, Rev 1, Feb 2000)

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